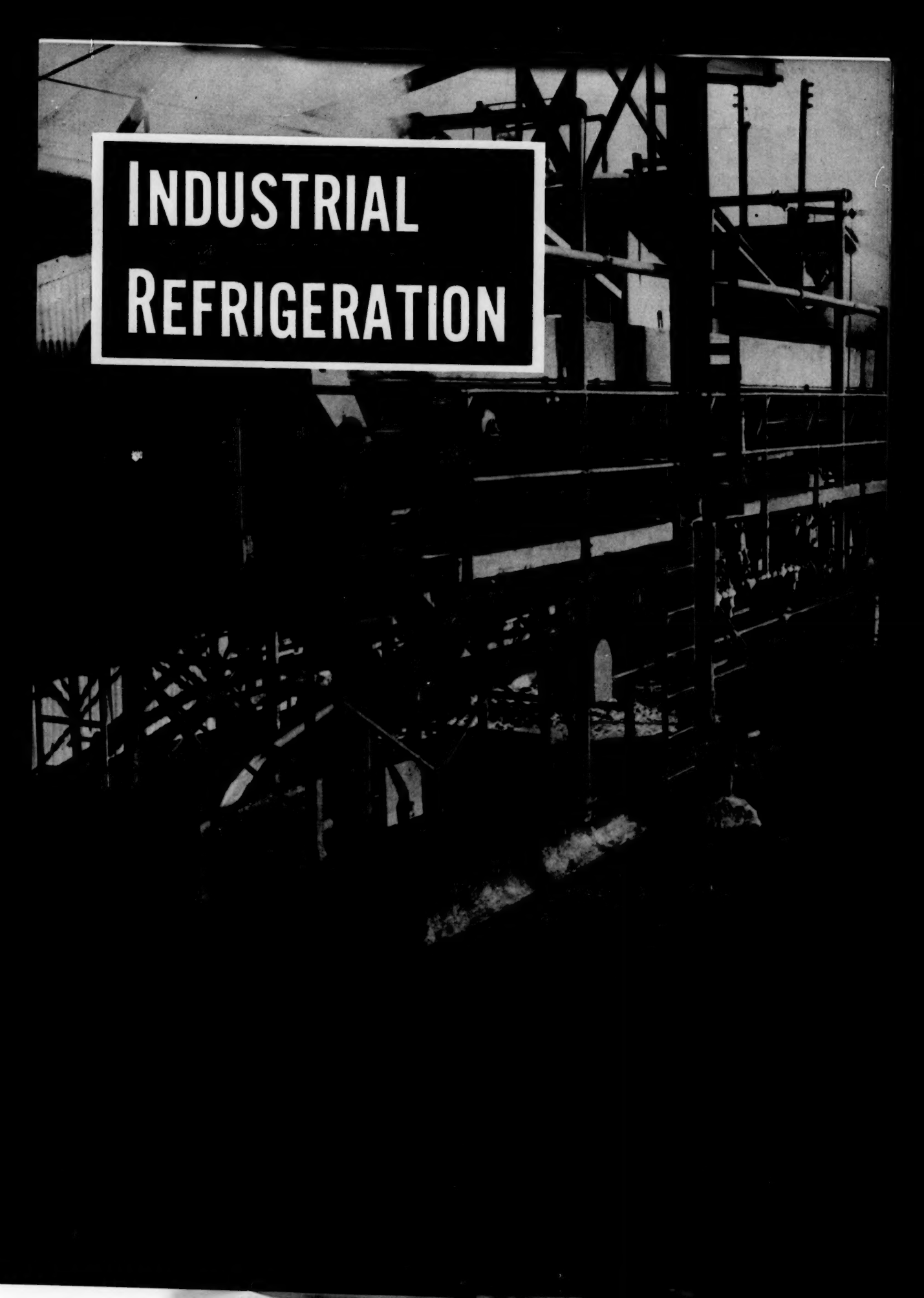
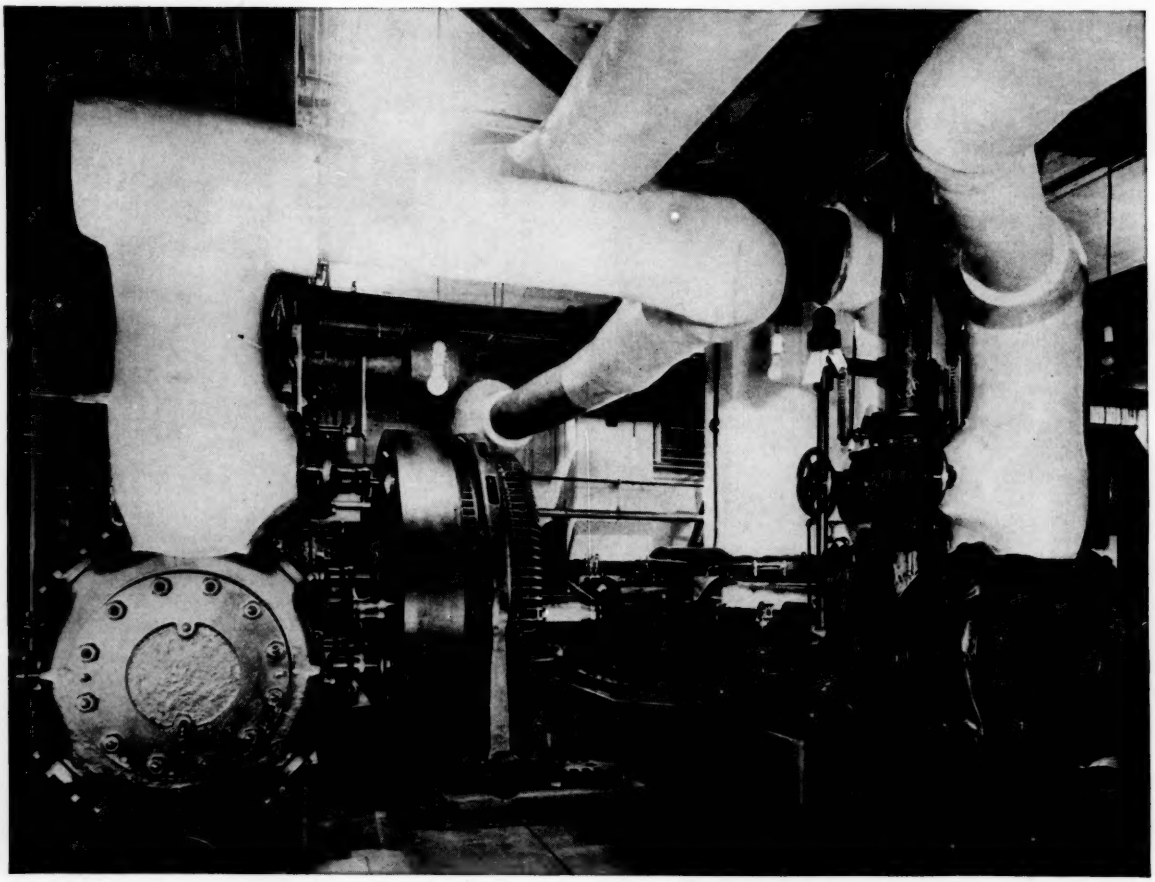

INDUSTRIAL
REFRIGERATION



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LUBRICATE compressors with *Texaco Capella Oil (Waxfree)*. It won't wax out in the system — assures clean, dependable performance even on special jobs calling for temperatures as low as minus 100° F.

Texaco Capella Oil (Waxfree) exceeds the requirements of the Freon floc test, as well as the specifications of all leading refrigeration manufacturers. It remains stable throughout its long service life, effectively resists oxidation. It does not foam and is compatible with all refrigerants.

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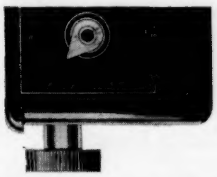


2 • Adjustable thermostat for range of +85° to +245° F.

3 • Steel electrical outlet box for making connection between heating element and thermostat—inlet for power.

4 • Rabbeted channels into casing.

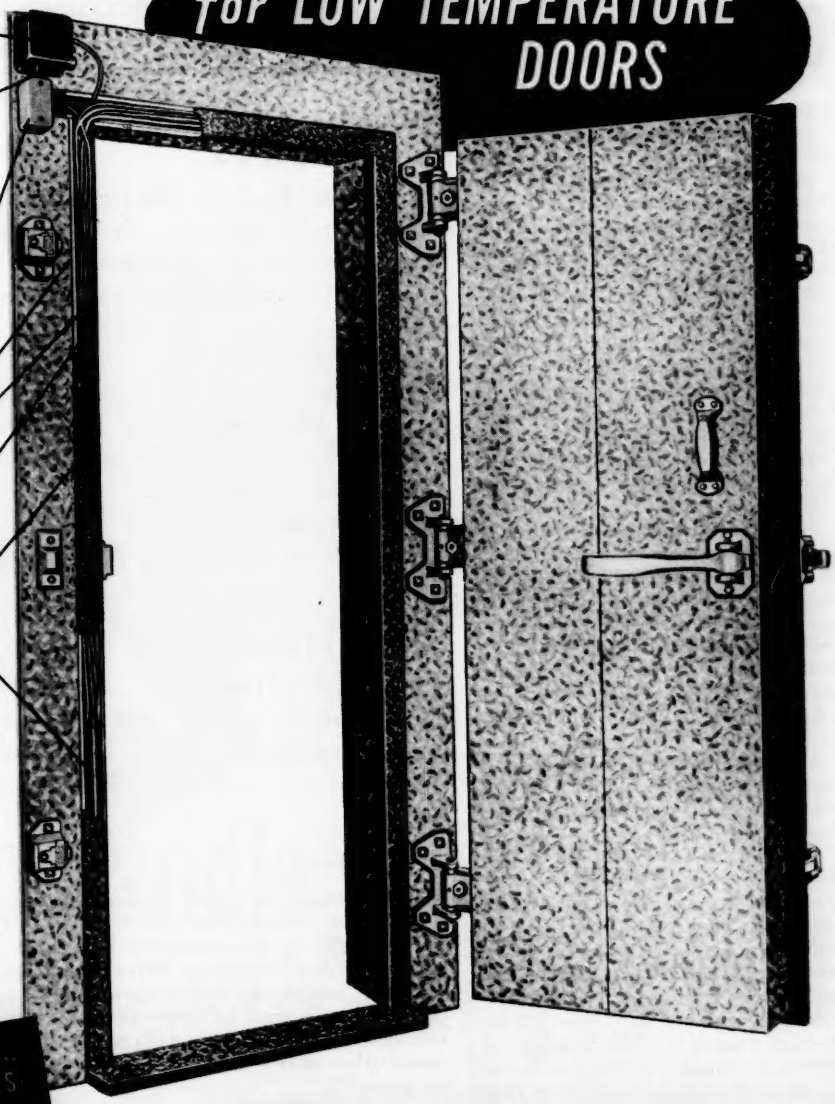
5 • Fireproof No. 26 gauge galvanized metal lined inside channel.

6 • Lead covered "heater cables" (4) held down securely by clips —approximately 20 watts to a foot. (110 volts—60 cycles).

7 • No. 10 gauge galvanized steel cover plates—removable.

8 • Capillary tube controls (on and off) thermostat.

The purpose of heating cables is to prevent icing conditions at the frame and sill areas where the door gaskets make their contact. The cables which are recessed into the frame casing are electrically heated and controlled by a "calibrated thermostat" (new improved feature by Butcher Boy), adjustable above the "dew point" of the air temperature. Since the heat expended prevents condensation it thus prevents freezing conditions.



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STAND-OUT

The Growing Market For Large Air Conditioning

THE field of large air conditioning and refrigeration is an extremely fascinating, exciting and fast growing business, said Charles F. Fenn, vice-president, machinery and systems division, Carrier Corp. at a recent press luncheon.

Of particular interest was Mr. Fenn's statement that the total business potential now available in the Class A office building space amounts to something on the order of 600 to 700 million square feet. Applying an arbitrary cost per square foot for air conditioning and reducing this to some extent to account for the proportion of such buildings which may be allowed to become obsolete, the potential market still to come in existing office buildings amounts to the staggering sum of three billion dollars, he said.

In apartment house space, like office building space, there has been a tremendous amount of building, and the competitive system here works to the encouragement of more air conditioning. In hospitals, it is essential that the best possible care be given to the patients and this includes control of climate so that they will not have to fight the weather while attempting to recover. Today well over half the hospitals in the country have air conditioning in some form in some area.

Another area of business which has shown enormous growth in the past year is the field of department stores and shopping centers. The new suburban shopping centers are new and thoroughly modern and almost all of them are completely air conditioned. There has also been a substantial volume of modernization in downtown stores. The result was an increase of more than twofold in new business (Carrier) during 1955 in the field of department stores and shopping centers.

No one has an accurate figure of the manufacturing space which supports the huge office spaces in our larger cities, but it is something on the order of 25 to 50 square feet of factory space to every square foot of office space. But that's not all the story. Manufacturing plants inherently house heat-making equipment where great quantities of heat are liberated. It is thus easy to see the terrific ratio that exists in the industrial market as compared to that rep-

(Continued on page 51)

Industrial Refrigeration

formerly ICE AND REFRIGERATION
Now in its 65th Year of Publication
J. F. NICKERSON, FOUNDER

Vol. 130 **March, 1956** **Number 3**

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The Cover:

Combination steam blancher and spray cooler for processing lima beans. Installation is at California Consumers Corp., Pasadena. Product moves onto blancher belt from the froth-flotation separator in the process building. After blanching, the product drops to the next belt and under water spray cooler heads. From cooling process the product moves to inspection, sampling and packaging. Freezing, casing and cold storage follow. Refrigeration as a utility figures in every other major process step. For complete story see article starting on page 13.

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6030

What's New

MACHINERY
APPLIANCES • PROCESSES

New 3000 lb. Fork Truck

A NEW 3,000 pound capacity model, the second of its Cargo-Scout fork truck series, has been introduced by The Elwell-Parker Electric Co., Cleveland, Ohio. The truck is engineered to handle loads in confined areas at maximum speeds. It features compact design with a short wheel-

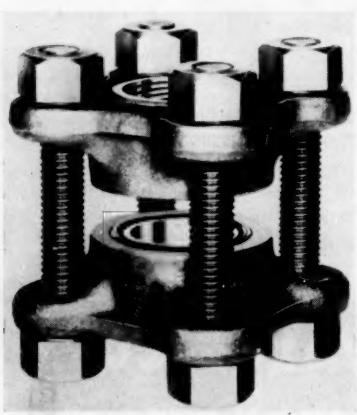
New Cargo-Scout fork truck by Elwell-Parker Electric Co.

base and 360 degree steering to permit maneuvering in narrow aisles and inside truck trailers and box cars. A unique device is provided on the steering mechanism to prevent steering wheel kick-back. On jobs where the operator must get on and off the truck frequently, stand-up end control provides extra convenience.

O-Ring Flange Unions

A LINE of 2-bolt and 4-bolt flange unions with O-Ring seals is now being offered by W-S Fittings Division, H. K. Porter Company, Inc. The unions are used in refrigeration piping and other applications. The O-Ring provides a tight seal against fluid pressure. Flanges are made of high strength forged steel with high tensile studs.

W-S O-Ring Unions are available in 3000 lb. class in both screw end and socket-welding types. The 2-bolt unions are available in sizes ¼ to 1¼ inch; 4-bolt unions in sizes 1 to 2 inches. O-Rings are available in a variety of precision molded materials to resist a wide range of service conditions. For complete information on sizes, dimensions and other technical data write to J. M. Tough, W-S Fittings Division, H. K. Porter Company, Inc., P. O. Box 95, Roselle, N. J.



Four-bolt flange union with O-Ring seal.

New Condenser Design Increases Capacity

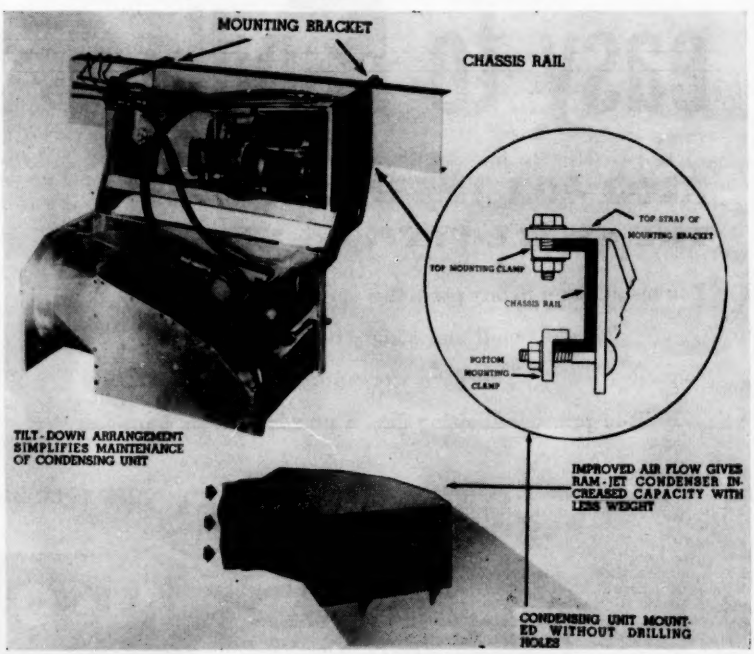
A NEW approach to condenser design is one of the important factors in the new lightweight continuous refrigeration system introduced by Kold-Hold Division, Tranter Manufacturing, Inc., Lansing, Mich. The Ram-Jet condenser provides greater movement of air, and dissipation of heat, yet is considerably smaller and lighter than conventional units.

The higher capacity with less weight and smaller size is achieved by a new design that takes advantage of the entire coil surface for dissipation of heat. The fan is mounted with the blades at right angles to the coil and at its forward end. In mounting, this brings the fan to the front wall of the truck body, taking advantage of the ramming of outside air into the system when the truck is in motion. Shrouding around the fan extends the full length of the coil, narrowing as it reaches the far end of the coil. This shrouding directs the air across the entire surface of the coil, making it possible to use a smaller, lighter unit because its full capacity is used. The coil normally is mounted flush with the streetside of the truck body.

Power for the condenser fan (and blower evaporator fan) motor is supplied by a high-speed, automatic generator that requires no battery, bringing further savings in weight. The generator, and the high-speed automotive-type condenser, operate from belts connected to the flexible drive shaft. An over-riding clutch permits operation of the refrigeration unit on the road without driving the electric standby motor. This clutch also permits operation of the unit by the standby electric motor without operating the truck engine. In this way, a smaller electric motor provides more tons of standby refrigeration.

The entire condensing unit, including standby motor, weighs 286 pounds with a 1 hp. motor, 298 pounds with a 1½ hp. or a 2 hp. motor and 315 pounds with a 3 hp. motor. The weight difference between models is due to different size standby motors and pulleys. The remainder of the unit remains the same. The same mounting frame accommodates all models.

Installation of the unit is simple. It is mounted to the chassis by brackets so there are no holes to drill. The unit does not extend above the chassis except for a ⅜ inch strap hook that is adjustable and is rigidly hooked to the inside top of the chassis side rail. The bottom of the unit is clamped to the bottom of the chassis with a "J" bolt around the inside bottom flange of the chassis side rail.


MOUNTING BRACKET
CHASSIS RAIL
TOP STRAP OF MOUNTING BRACKET
TOP MOUNTING CLAMP
CHASSIS RAIL
BOTTOM MOUNTING CLAMP
TILT-DOWN ARRANGEMENT SIMPLIFIES MAINTENANCE OF CONDENSING UNIT
IMPROVED AIR FLOW GIVES RAM-JET CONDENSER INCREASED CAPACITY WITH LESS WEIGHT
CONDENSING UNIT MOUNTED WITHOUT DRILLING HOLES

New Ram-Jet condenser announced by Kold Hold Division, Tranter Manufacturing Inc. Diagram illustrates how unit is mounted without drilling holes

New Continuous Food Freezer Handles Varied Products At High Speed

THE development of a continuous food freezer of much versatility, which can freeze thousands of wrapped food packages an hour, was announced at New York at the National Frozen Food Convention in the Waldorf Astoria.

Produced by the York Corporation and incorporating mechanized conveyor equipment manufactured by Union Steel Products Company, of Albion, Mich., the York-Union continuous food freezer is completely automatic equipment able to freeze foods of varying types and sizes simultaneously.

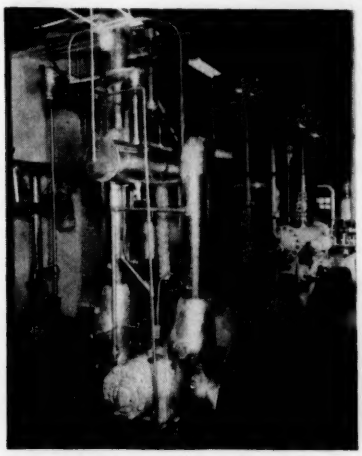
Designed originally for the baking industry at York's engineering and development laboratories, the continuous food freezer is also expected to gain wide use in the freezing of poultry, packaged meats, ice cream and other bulk food products.

A typical York-Union freezing tunnel 60 feet in length, 14 feet wide and 11 feet high could freeze each of the following quantities of food in an hour; 3720 half gallon or 9300 pint packages of ice cream; 3570 small meat pies; 5360 small fruit pies; 3560 loaves of bread; 5955 pullman rolls and 2390 whole 2¼ lb. chickens.

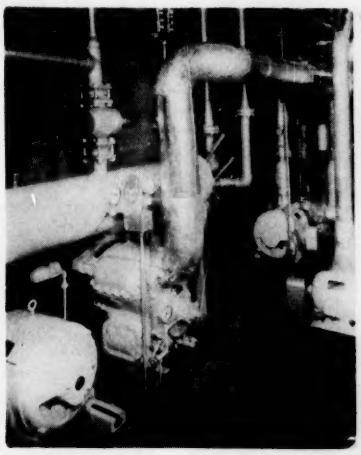
The new automatic freezer can be kept at a uniform temperature of minus 30 F, or lower if desired, by means of a York multi-stage compression system which refrigerates the freezer's coils to a temperature of minus 40 F or below. Six propeller type fans blow air through vertical banks of coils, and a special air distribution system keeps the temperature uniform throughout the freezing enclosure.

Through integration of the York-Union continuous food freezer into food processing production lines, important materials handling economies are effected, as wrapped products can be frozen quickly and moved into frozen storage without a hand touching the package. Complicated and expensive systems of stacking foods on hand propelled carts, which must be rolled into frozen storage rooms, are eliminated.

Many bakeries presently produce according to immediate demand, necessitating frequent changes of production techniques each day. The continuous food freezer should play an important role in enabling bakers to concentrate a large proportion of each day's production on a single item while meeting customers varied demands from a frozen inventory.

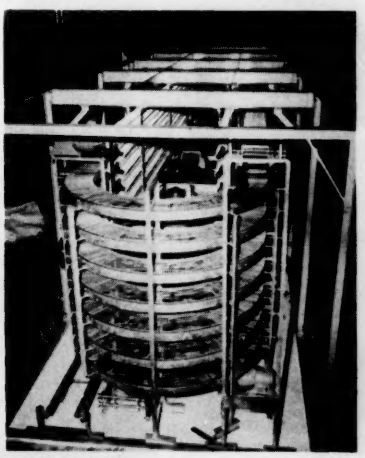


York-Union continuous food freezer compound refrigeration system showing the small, compact York rotary booster refrigeration compressor which enables the freezing system to produce below zero temperature inside the freezing tunnel.



York-Union continuous food freezer compound refrigeration system showing the York "V/W" type, primary refrigeration compressor and the refrigerant re-circulating pump.

Automatic food freezer shown handling wrapped bread loaves can freeze varied types and sizes of food. The York-Union Continuous Food Freezer takes in freshly processed food on conveyor (right) and discharges frozen food to storage rooms on lower left conveyor.



High speed food freezer with outer walls and roof removed shows conveyor system, fans (center) and banks of freezing coils. Developed by the York Corporation with the cooperation of Union Steel Products Company, this new completely automatic equipment can freeze thousands of wrapped food packages of varied types and sizes every hour.

New Pipe-Wrap

A NEW pipe-wrap, which combines an under-wrap of quality glass fibre insulating material and an outer-wrap of vapor sealing tape, is now available under the trade name of "Easy-Wrap".

Showing application of new Easy-wrap pipe wrap

This new wrap is said to prevent condensation and sweating of cold water pipes —provides a highly efficient insulation for hot water pipes, preventing cooling of water in pipes and waste of fuel — and a high degree of protection against freezing when pipes are exposed to lower temperatures. Application of this new wrap is very simple, requiring only a loose, progressive spiral wrapping of the glass fibre insulating material around the pipe.

GENUINE
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PIPE COVERING
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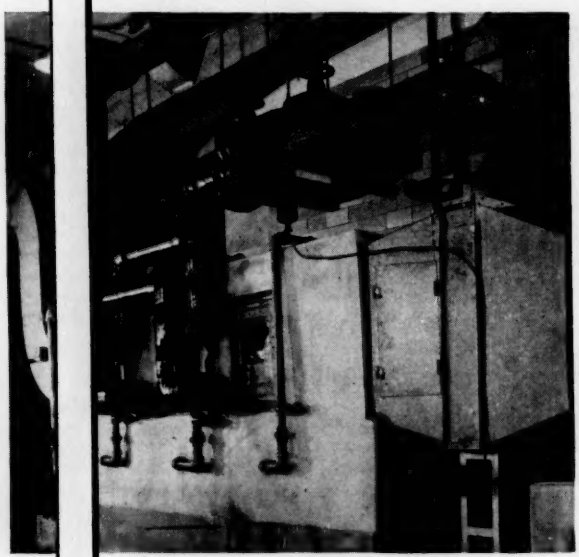

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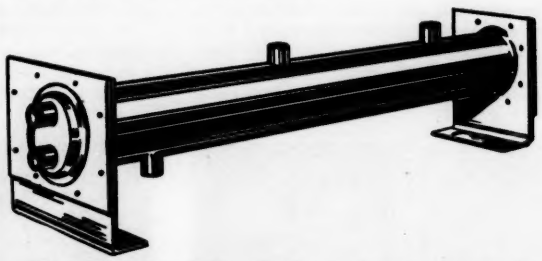
New Line Shell and Tube Condensers

A NEW line of shell and tube condensers called the KY series is currently being announced to the refrigeration field by the Standard Refrigeration Co., 332 S. Hoyne Ave., Chicago 12, Illinois. These new Standard shell and tube condensers are sturdily constructed and underwriters listed. They feature high capacities, low water pressure drops, simple cleanability; and are particularly acceptable where limitation of available space necessitates condensers of smaller dimensions.



New KY series shell and tube condenser announced by Standard Refrigeration Company

According to the announcements, the condensing capacity of the KY series condensers is 15,000 Btu/hr per hp at 105 F condensing temperature, with either 1½ gpm per hr at 75 F or 3 gpm per hp at 85 F. Allowance for moderate fouling has been included. Another important feature is that low water pressure drops make cross-connections for tower service unnecessary. Water passes can be drained through the lower (water inlet) fitting.

The manufacturer has prepared graphic actual pre-performance charts which demonstrates the operating characteristics of the new KY series. These will be furnished on request, without obligation. Write manufacturer.

Cooling Towers Cut Water Losses

WATER at the rate of 60 million gallons annually was being used by Michigan Molded Plastic, Inc., Dexter, Mich., in producing plastic parts. A large percentage of this water was being used merely as a coolant — to draw heat away from molding machines. The heat generated by the molding machines raised the temperature of this cooling water to a point where it was impractical to recirculate it directly back to the machines. Obviously, the company decided, it would be most advantageous to develop a system that would efficiently drop the temperature of the water to a point where it could be used over and over again, rather than pouring it down the drain as "waste" water.

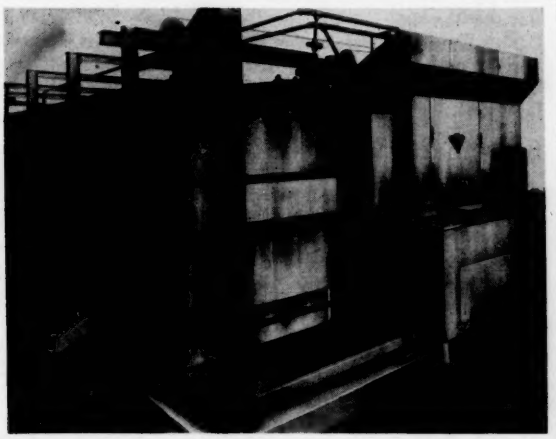
To meet this problem it was decided to use water cooling towers. Two Acme Flow-Mizer towers were selected and for the 14

Acme Cooling Towers installed in the court area of Michigan Molded Plastics Inc. plant in Dexter, Mich. are saving water.

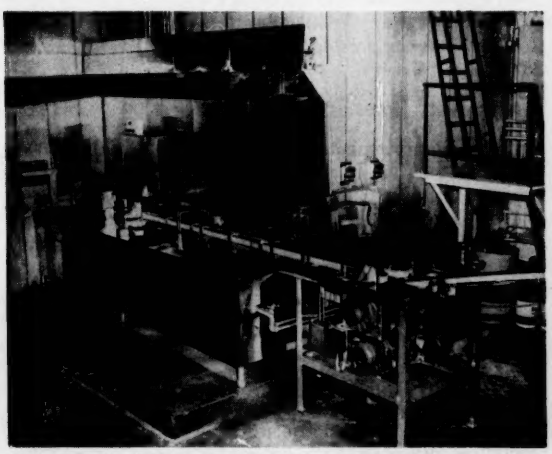
injection molding machines, they chose a Model PACT-25 tower adjusted to deliver water at a rate of 126 gallons per minute. For 32 compression molding machines, they installed a Model PACT-35 tower set to deliver water at a rate of 165 gallons per minute. The Acme Flow-Mizer towers were installed at ground level adjacent to the building in an outdoor court. Experience to date indicates that they keep the water at the desired temperature, and sharply reduce the cost of city water formerly consumed. Dan Vass, vice-president and general manager, reports that the units will pay for themselves in a very few months.

Ready Packaged Type Freezers Provide Automatic Processing

FACILITIES in the Fairmont Canning Company plants recently acquired by Stokely-Van Camp (See INDUSTRIAL MERCHANDISING, February, 1956, page 18) include modern frozen food package-type freezers. The product, packaged for freezing, enters these machines located in a very low temperature room. Here they move at a fixed rate through the machine and emerge fully frozen for casing and storage. These freezers, like the rotary boosters used in the plant's two-stage NH_3 compression system, are products of Freezing Equipment Sales Company, York, Pa.



Freezing equipment obtained by Stokely-Van Camp in acquisition of Fairmont Canning includes FES automatic package freezer as pictured above. Photo shows the freezer components prior to insulation enclosure.



Package loading table and mechanical equipment for the FES freezer at the Fairmont Winnebago plant. Only the product enters and leaves the freezer room which is located at the left and behind the loading table.

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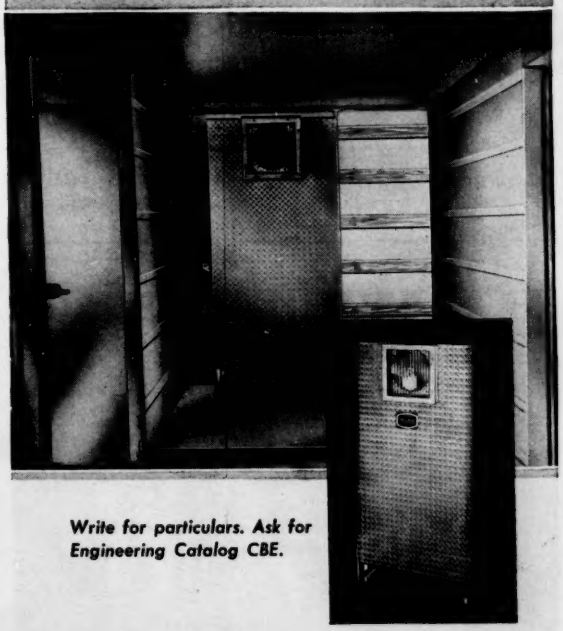

Write for particulars. Ask for Engineering Catalog CBE.

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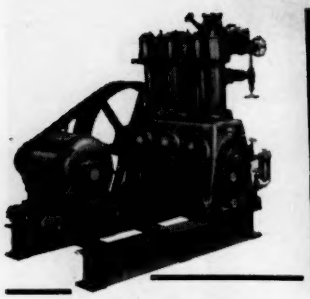

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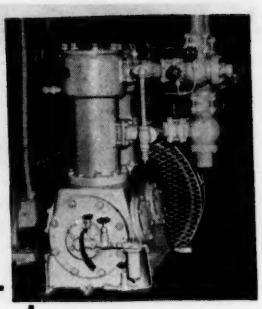
from 25 to 150-ton capacity



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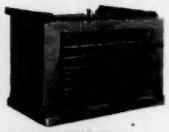
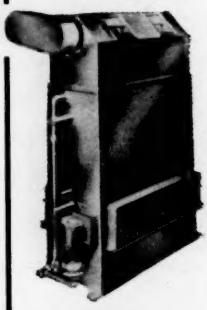


RAPID FREEZE UNIT COOLER
Designed for blast and freezer storage



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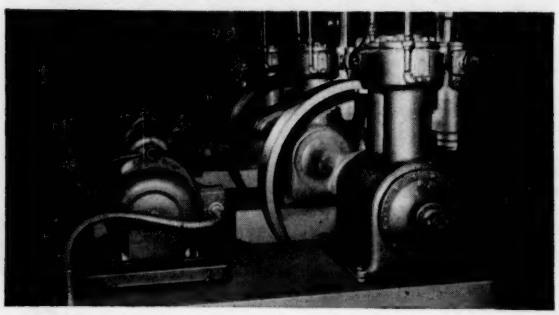

PRESS BRIEFS

Colorado Ice Company Changes Management

THE management of the pioneer Colorado Ice and Cold Storage Company of Denver, Colorado, was taken over January 1 of this year by Properties Management Corporation of New York.

Colorado Ice and Cold Storage Company has been long owned by the prominent Adams interests, leading political and financial figures in the Rocky Mountain states. In turning over the management to the Properties Management Corporation, which specializes in the operation of some 60 ice and cold storage plants throughout the nation no change in ownership has been made or is considered. Eugene H. Adams, president of the International Trust Company confirmed the appointment.

The plant had been under the active management of Clarence Adams, Jr., until he suffered a heart attack a few months ago.

Details of the change over were worked by Glen Greene, executive of Southeastern Public Service Company of New York, under which Properties Management Corporation functions.

Says Indoor Air Needs Purifying

UNTIL science can conquer the air pollution problem outdoors, the people must do what they can to purify the air indoors to give as much relief as possible, a leading air pollution expert said. Dr. O. L. Barnebey, president of the Barnebey-Chaney Co., an air recovery firm of Columbus, O., addressed a meeting of the American Society of Refrigeration Engineers at Los Angeles.

"Only recently," he told the 150 members and guests, "has there been any real consciousness of air pollution problems. We eat two to four pounds of food a day and drink about three to four pounds of liquids. But, we breathe some 160 pounds of air in 24 hours."

Dr. Barnebey told the group they should include air purifying units in their heating and cooling apparatus to give residents of areas such as Los Angeles as much pure air to breathe as possible. He lauded air pollution abatement efforts in Southern California and said the day smog will be effectively reduced is in the foreseeable future. The meeting was presided over by Dan D. Wile, chairman of the society.

Nebraska Law Improves Eggs

VAST improvement in eggs sold at retail in Nebraska during the past year has been reported by the State's Department of Agriculture, Inspection Division. Credit for the improvement is given entirely to the State's new law requiring eggs to be refrigerated at all points between producer and consumer. Actually, the law improved conditions before it became legally effective; it became effective in the Fall, but dealers anticipated it and installed refrigerated cases last spring. Many have reported they have already paid for the equipment by maintaining quality during the summer.

Last May, Farm Journal's Southern Edition ran a story of an on-the-farm experiment in which a commercial poultry producer paid for his cooler in one summer season. During July, more than 85 percent of his eggs sold as Grade A, whereas only 60 percent of uncooled eggs made Grade A and when held three days, the Grade A percentage dropped to 45. — TRRF Information Bulletin.

Solar Power to Provide Heat and Refrigeration

A SOVIET-RUSSIAN design for a fantastically large sun power machine to heat and cool a city of about 17,000 population was reported by Prof. V. A. Baum, of Russia's Solar Research Laboratory to the World Symposium on Applied Solar Energy. The machine, still in the planning stage, would utilize more than an acre of mirrors on slowly moving railroad cars to focus the sun's heat on a water tank atop a 135-foot tower to produce steam for power.

The plan calls for many small cars travelling on 23 rail tracks laid down parallel to each other in a space about like the turn of a race track. On each car would be a mirror 9 by 16 feet, composed of 28 smaller mirrors, so arranged that they would reflect and concentrate the sun's rays on a side of the water tank. The cars would move slowly to keep the mirrors focused on the tank throughout the day.

The solar heat hitting this tank would produce during each working hour 13 tons of superheated steam at 330 degrees. The steam would heat houses in winter or cool them in summer or produce power to pump water for irrigation. Prof. Baum said that such a system might be set up near the city of Ashkhabad in the Turkmenian Republic. It would be the largest of its kind reported so far.

Foremost Dairies Charged With Violating Antitrust Law

THE Federal Trade Commission has taken antitrust action against Foremost Dairies, Inc., declaring that the absorption of thirty-nine other dairy concerns and twenty-five of their subsidiaries since 1951 represented a "constant and systematic elimination of actual and potential competitors." Foremost officials said the Government action came as a complete surprise, without any investigation or notification from the Government.

Selling Ice In Alaska

AN ORDER for four S & S vending machines has been received by the Western Ice Equipment Company, Francisco, for installation in Anchorage, Alaska. The purchasers are K. C. Britt and Cliff Hahn of the Alaska Fish & Farm Products, Inc. The machines, 9 x 16 feet size, are to be fitted with bag and block ice vendors. Shipment was made about March 1. The stations were transported to dockside in San Francisco by truck and to Anchorage by coast-wise steamers.

European Workshop on Freezing of Fish

A WORKSHOP arranged by the office of European Economics Cooperation in Kiel, Germany on the quick freezing of fish was attended by sixty representatives of fourteen countries: Austria, Belgium, Canada, Denmark, France, West Germany, Great Britain, Greece, Holland, Iceland, Ireland, Italy, Norway, and Sweden. Object of the conference was the pooling of technical and commercial knowledge which has been gained up to the present in the technique of improving quality and packaging of quick-frozen fish which so greatly affects the fishing industry of all Europe. Summaries are given of the papers presented at the workshop and the discussions which followed the presentation of the papers, including one on retaining the quality of fishery products by Charles Butler, which was published in the September, 1955 INDUSTRIAL REFRIGERATION.

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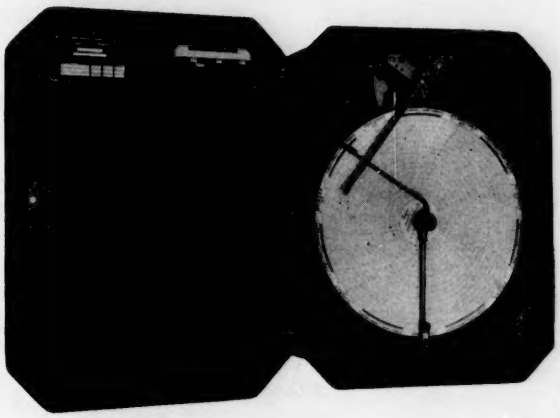

Gives you a minute-by-minute record of temperature

The Taylor Refrigerated Truck Recording Thermometer is a safety device specially designed for carriers of perishable foods. It gives you a complete record of the temperature maintained while produce is in transit and protects the carrier against unjust claims of spoilage due to other causes.

Can be mounted inside or outside truck

Neoprene door gaskets make the case dust and moisture proof. A built-in cylinder type lock which prevents tampering with the instrument is available at small extra cost.

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Unaffected by vibration. The Taylor Truck Thermometer gives you positive proof of adequate refrigeration . . . plus a valuable means of checking on your equipment and operating efficiency. Write for Descriptive Bulletin 98208. Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada.

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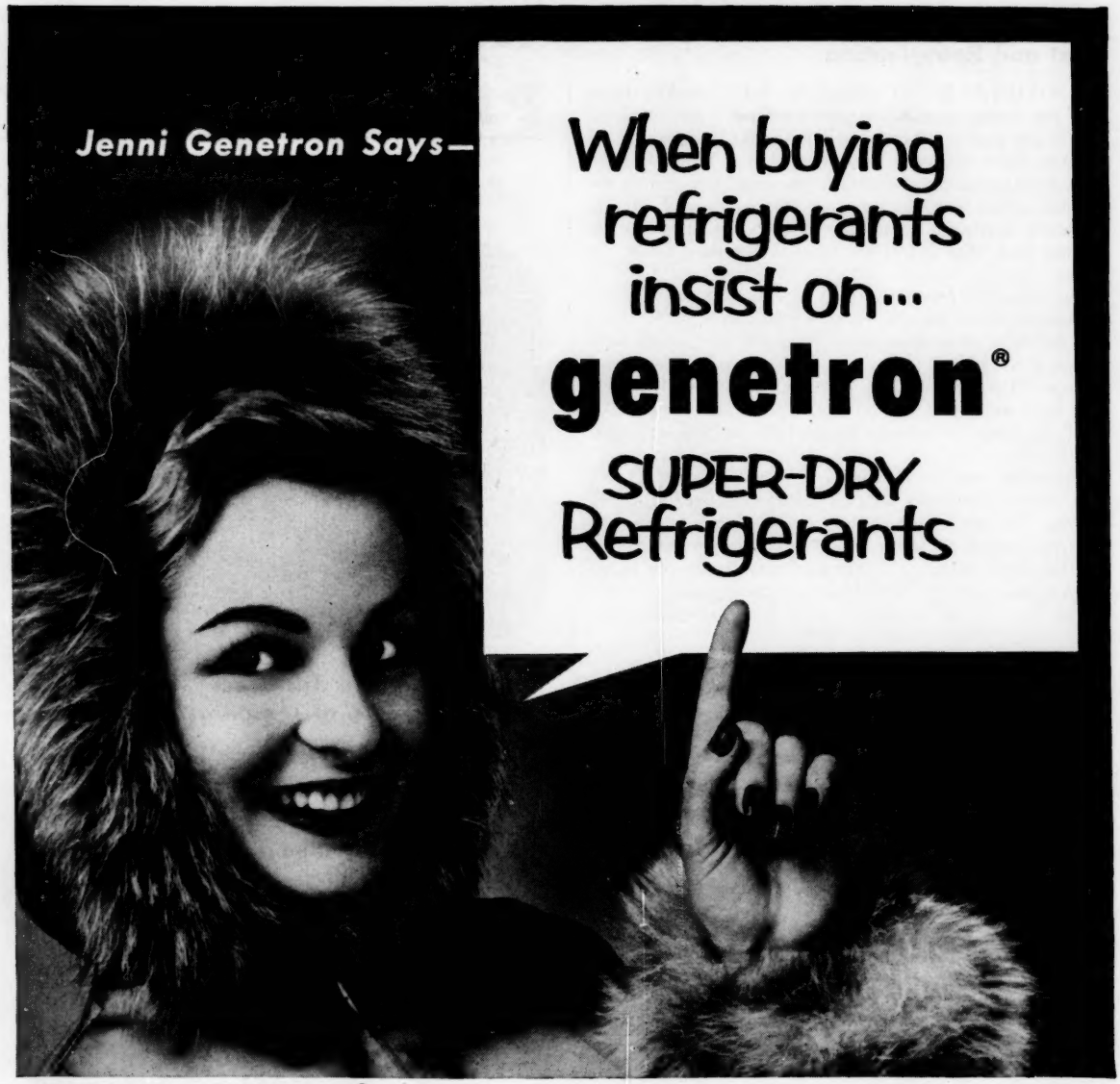
MEAN ACCURACY FIRST



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In the Spotlight

FOOD-O-RAMA visitors including delegates to the National Ice and NAPRE Conventions at the California Consumers plant at Pasadena, Calif., saw frozen food being processed, and samples of the product. They saw how samples from each line are drawn and graded by a trained worker; and additional tests being made in the laboratory. The occasion was an annual open house for distributors and processors of frozen foods. Its purpose is to show single plant production operations and samples of the product and to distribute educational literature. The complete story of this Food-O-Rama, with description of refrigerating and processing equipment, and numerous pictures, is given in the article starting on page 13.

A DISCUSSION of extensive research on insulated structures in the refrigerated warehousing industry, started in February, is concluded in this issue, page 19. One result of the research has been extended life to equipment, premises and accessory lines, with particular reference to subfloor ventilation tests. This concluding installment considers on-grade vapor barriers, steel structures, air blasts on walls, and other structural materials.

AN OPTIMISTIC report has been issued by The Fish and Wildlife Service, U. S. Dept. of Interior, on fishery products and the general food situation. Although production of fish is expected to decline and holdings are down slightly because of adverse weather conditions, the index for fresh and frozen fish rose during October and November. For summary of report, see page 22.

BOOSTER Compressors of the reciprocating type were advocated in a paper "Multi-cylinder Compressors For Single and Multi-Staging", in October 1955, INDUSTRIAL REFRIGERATION. Advocates of rotary type machines were quick to disagree with some of the arguments presented. At the same time, several NAPRE members were suggesting to IR's editorial staff that a unique presentation on rotaries by Don A. Parkhurst of Chicago, entitled "Gee Whiz", was worthy of reproduction. They appreciated Parkhurst's humorous technique, and believed it would add variety to NAPRE's "official" section in IR. On page 30 will be found the first dialogue story to be published in IR. Parkhurst has revised his story from its original version to give it a more effective dialogue presentation. It is hoped that beneath this humorous vein, readers will readily recognize the more salient features and economic applications claimed for rotaries.

A TRAINING Conference by The Refrigeration Research Foundation, and the National Association of Refrigerated Warehouses at Purdue University, January 23 to 26, attracted 68 warehousemen personnel. The program followed lines of advanced training on management and operation subjects directed by leading warehousemen and other speakers. Special attention was directed to current problems of the industry and to new management and operation ideas. For report see page 24.

A GOOD PACKAGE for chilled or ice-packed poultry has not yet been developed, and not until that has been accomplished can the poultry industry work toward standardization of package and product. It has been found that the major factor in getting shoppers to buy the product is a desirable self-selling package. For discussion of this problem see article on page 18.

THE FIELD of large air conditioning and refrigeration is a fascinating, exciting and fast growing business, according to a leading air conditioning manufacturer. As an example, he says the potential market still to come in existing office buildings amounts to the staggering sum of three billion dollars, and in addition there is a tremendous amount of new building construction, most of which is air conditioned. The situation is graphically summarized in the article on page 2.

AMONG THE principal research needs by the refrigerating industries are studies to improve tenderness of frozen poultry, to aid processing and storage of precooked foods, provide better packaging for frozen vegetables, fruit, bakery and poultry products and develop new equipment methods for large-scale freezing of bread and other bakery items. This was embodied in a report by The U.S. Department of Agriculture's Cold Storage Research Advisory Committee at its recent annual meeting. For summary of report see page 46.

THE BEST ITEM for a retail food store to sell is frozen food. Dollar sales per square foot and gross profit margins are considerably higher than for any other product, according to Arthur D. Little in The Industrial Bulletin.

FROZEN FOOD Sales now top one billion dollars a year. The Grocery Manufacturers of America says 64 percent of all food retailers have installed frozen-food cabinets. The market includes about three-fourths of the families in the United States.

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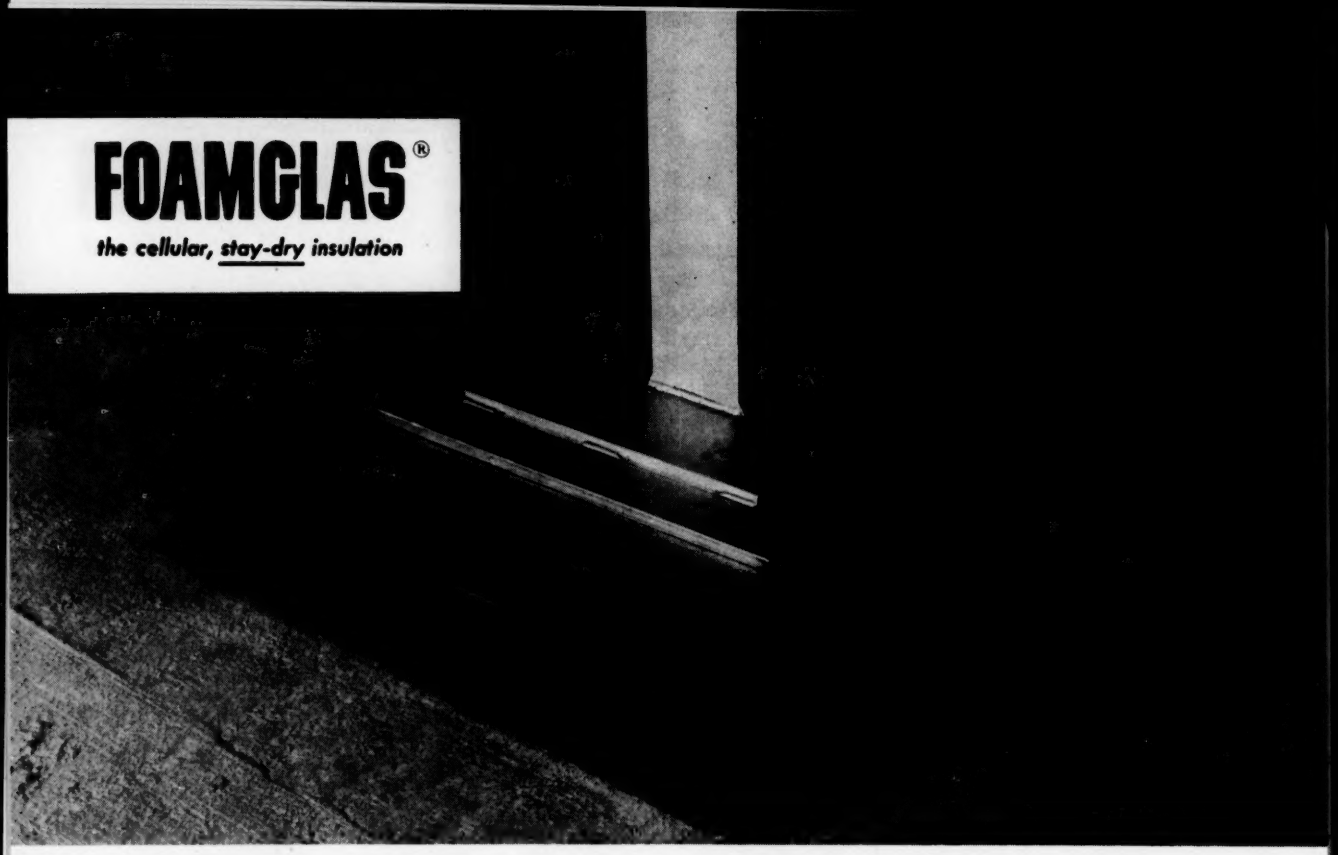
the cellular, stay-dry insulation



President Carl Steimle of Southern Michigan Cold Storage says...

"The weight of our new warehouse actually rests on FOAMGLAS floor insulation"

"FOAMGLAS floor insulation actually supports much of the weight of our new refrigerated warehouse." That's the report from Carl Steimle, president of Southern Michigan Cold Storage Company, Sodus, Michigan. They picked strong, stay-dry FOAMGLAS to insulate not only the floor, but also the roof, ceilings and all walls of the new building, first stage in a $1½ million building program.

This unique all glass insulation has a compressive strength of over 7 tons per square foot. Mr. Steimle says, "That made it possible to prevent thermal 'short circuits' by putting insulation *between* all load bearing columns and other structural members. All columns bear directly on FOAMGLAS without reducing its insulating performance."

FOAMGLAS can't absorb the moisture that cuts efficiency of other insulations. "The result," concludes Mr. Steimle, "is *constant*, precise control of temperatures (from —35 to +35F°), and we don't have the headache of recurring insulation replacement."

These benefits will be *yours* when you insulate your buildings, piping or equipment with FOAMGLAS. Prove it to yourself with six simple tests which you can perform in your own office. Write today for a free sample and complete testing directions.

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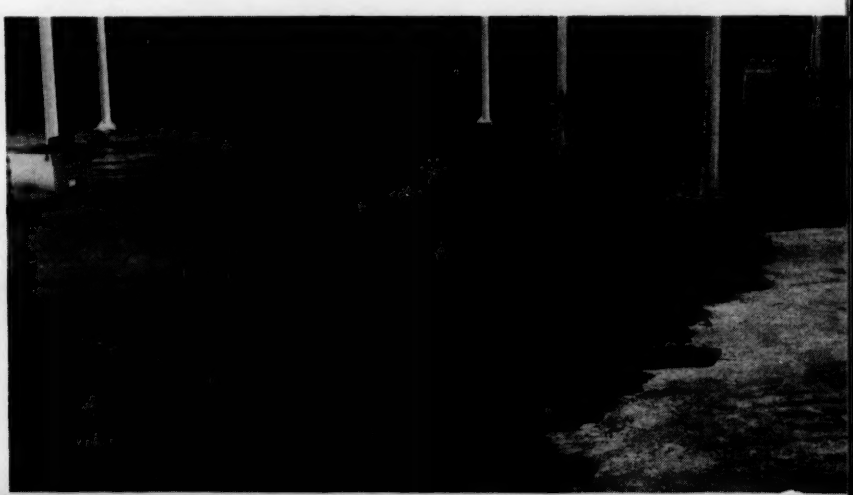


Two layers of 4" FOAMGLAS insulate the entire floor area. There are no thermal "short circuits" since all load bearing columns rest directly on this remarkably strong insulation (see close-up, above).

Year Round Food Freezing Operation In California Plant

OCTOBER through March usually spells plant down-time, overhauls, repairs, and personnel respites for frozen food processors and packers, refrigerated transportation facilities, industrial ice making, and air conditioning installations. It isn't so with California and West Coast packers, like California Consumers Corp., packers of "Prime Frozen" brands. Delegates and visitors to both NAPRE & NAII Conventions at Los Angeles learned that fact at the November Frozen-O-Rama staged at The Consumers Plant at Pasadena, Calif.

Food-O-Rama visitors learned that November and December packs or freezing on the lower Pacific Coast are equal to the March, April and June activities. October is the peak month, and July a poor second to that (See Fig. 1). Fortunately for Eastern and Midwest engineers, owners and management, visitors, this year-round activity in California provided an opportunity for a postman's holiday, and observation of packing operations for lima beans, broccoli and brussels sprouts, in one of California's largest operations.

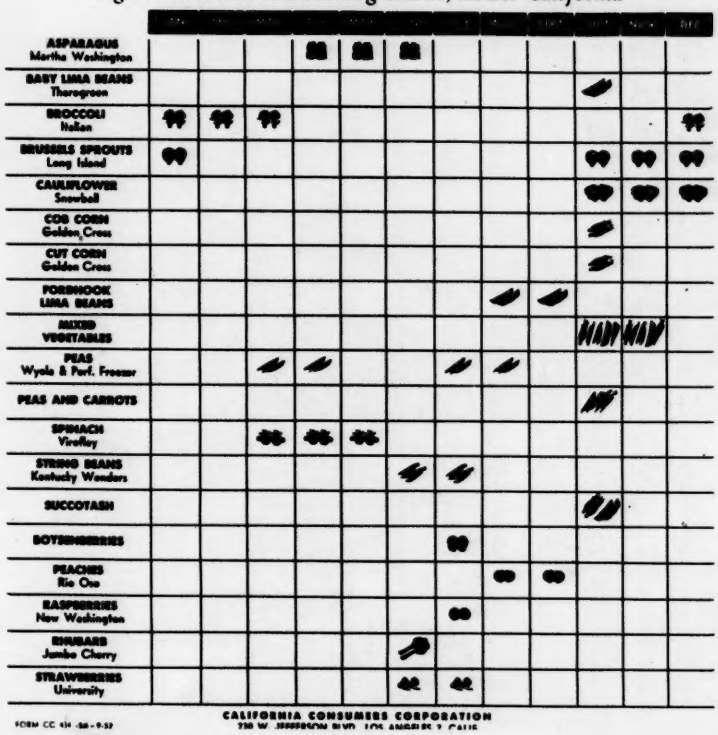
Visitors at California Consumers learned that the firm's total pack for 1955 was 30 million lbs. Total cubic feet of freezer storage space available for storage of product at plant is 700,000 cu. ft. net. Their largest lima bean pack ever was 12 million lbs., and the number of products they pack in their own plant is 15. Total acreage used in growing products for their pack is 10,000.

Tons of ice used to cool products as they are hauled to the plant is 4,000 tons. Connected horsepower in plant is 3600 hp, and horsepower of refrigerating compressors comes to 2530 hp. The average number of days per year that the plant is in production amounts to 270 days.

Frozen Food-O-Rama

What is the Frozen Food-O-Rama, is the question on Consumer visitors' lips as they visit this presentation for the first time. Actually, it is an annual open house for distributors and grocers. Advertising and business relations consultants would call it public relations. However to Consumers, the principle objective of Food-O-

Fig. 1—Frozen Food Packing season, Lower California



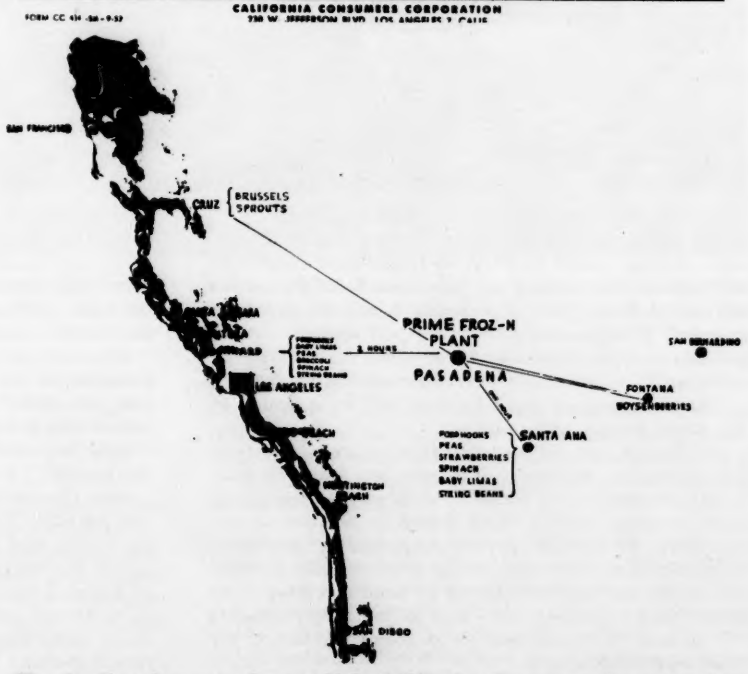
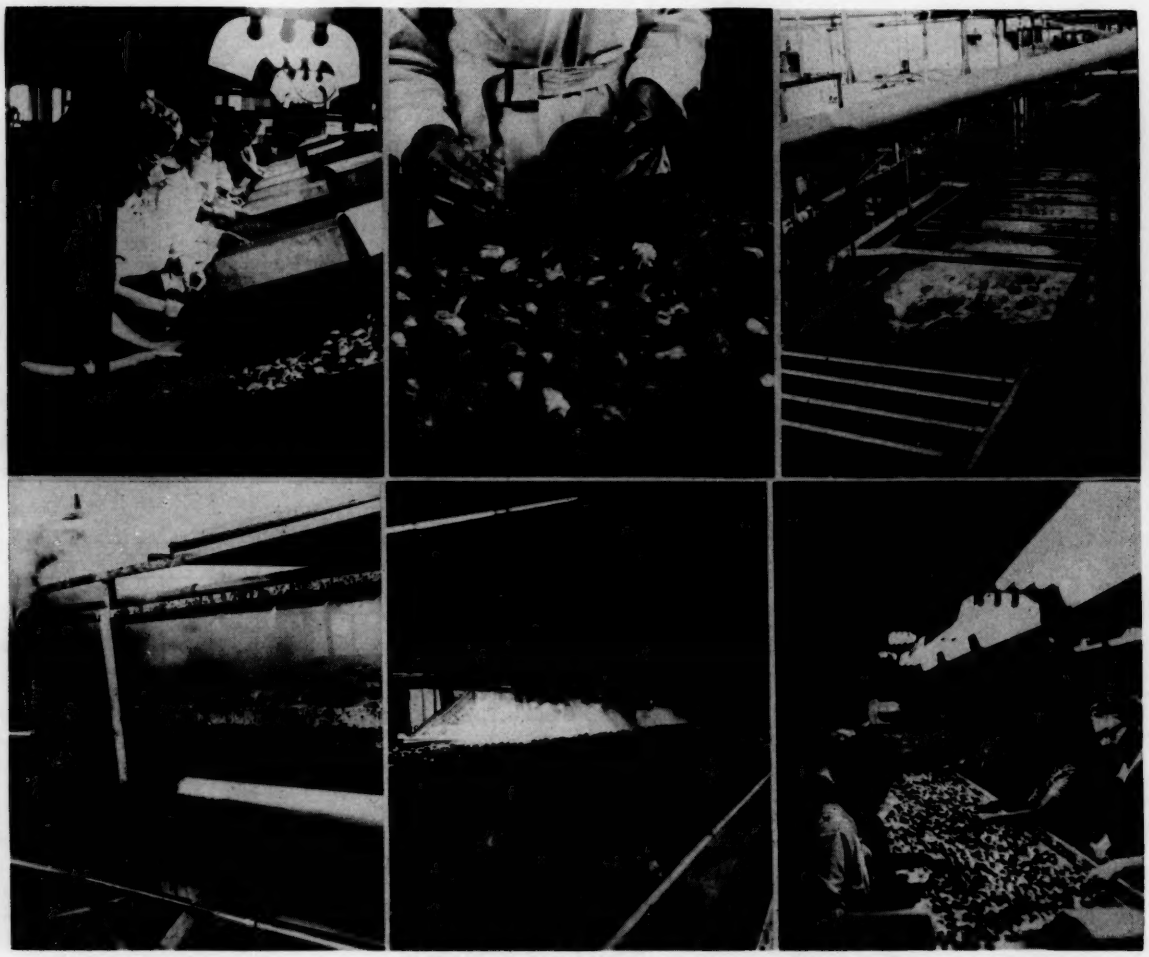


Fig. 2—Growing area from which California Consumers draws produce for freezing.

Rama is to show single plant production operations, samples of the product and to distribute educational literature.

Among those who attend annually in addition to distributors and grocers, are restaurant owners, institution operators, major chefs and other interested people. All actually see food products in process. They receive samples of the products, first hand information on the merchandise, and sales literature. Although this event was held in November of 1955, California Consumers Corp. holds the affair at a different time of the year annually, so that other products may be seen in production.



Brussel Sprouts Processing in Lower California.

Americans now enjoy brussel sprouts and other produce the year round by virtue of frozen food enterprises in California at times of the year when local production in the Midwest, East and South would be far from seasonal. Refrigeration plays a big part in bringing this product to the consumer on a year round basis. However, other utilities, especially water, are absolutely essential to the processing of these foods as will be indicated by the photo display shown above.

At the top left, women are trimming stem ends from brussel sprouts on receipt of the produce from the field. Stems are removed by means of a (Hydrout) hydrologically operated cutting blade which is pictured in the top center photo. This device, developed by Magnuson Engineers, San Jose, Calif., about 1948, actually doubled the output that can be obtained by hand trimming. This device uses 1 gpm of water at 150 psi. Approximately 175 pounds of sprouts may be stemmed per person per hour with the Hydrout.

After trimming, brussel sprouts are washed in 30 ft. long x 6 ft. wide and 4 ft. deep, single pass washers. The washer pictured at top right was designed and fabricated by California Consumers Corp. They have three such washers in the Pasadena installation, each using approximately 500 gpm at 50 psi, 70 F. A considerable portion of the washer water is eventually recirculated to increase turbulence.

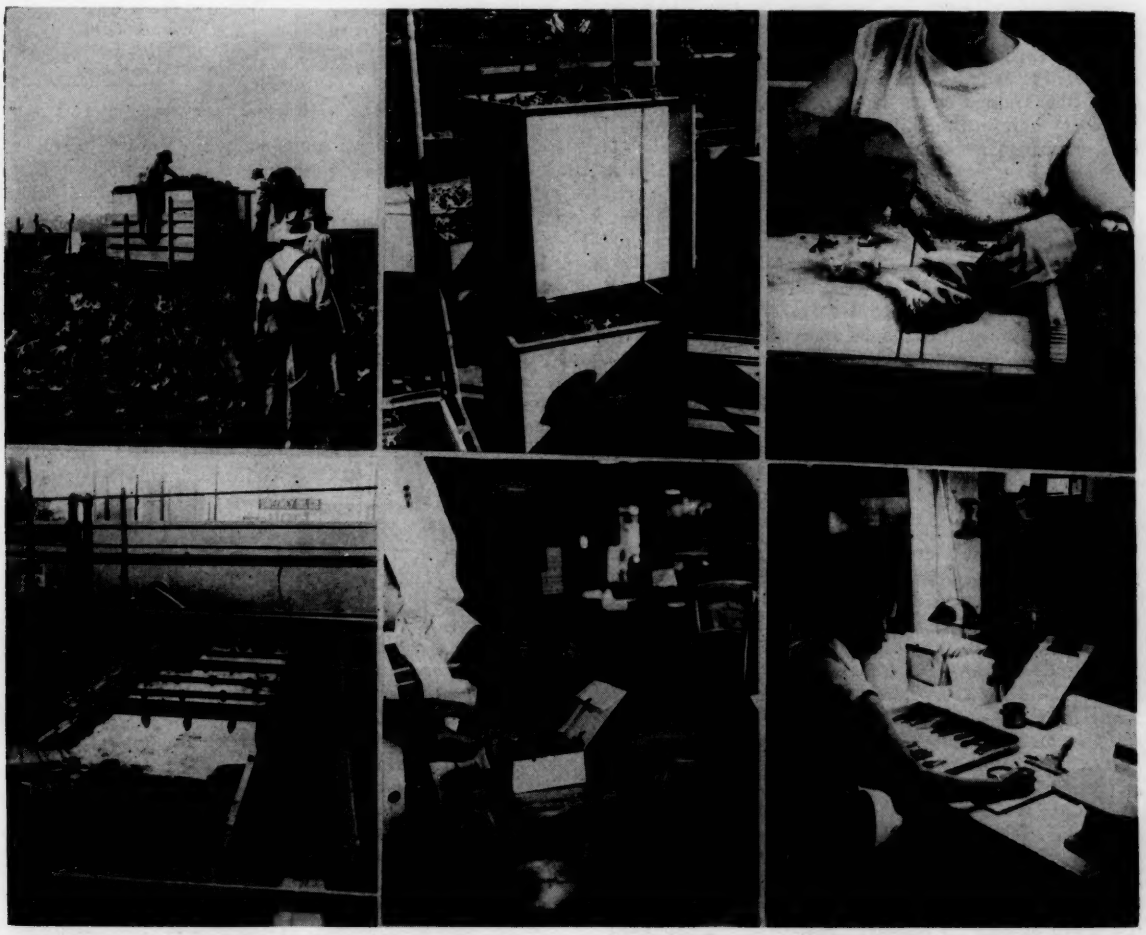
From the washer, the sprouts move through a steam blancher on a 6 ft. wide stainless steel belt. They make one pass under steam sprays in the 65 ft. travel of the belt. Steam pressure at the nozzles is 40 psi.

Heat imparted in the blancher must be removed from the sprouts. This is accomplished in a cold water spray cooler. Consumers uses tap water with fog nozzles for this purpose. Spray outlets are placed 12 inches in both directions, and the water is delivered at 70 psi, 65 F. Again the conveyor belt is a 6 ft. stainless with 50 ft. of travel. Some of the water at this point of processing is recovered and used for preliminary washing and waste conveying. At lower right, the blanched and cooled product is inspected under the supervision of a USDA inspector and the frozen food processor's own trained women graders.

Growing Areas

Like many major frozen food packers, California Consumers Corp. provides ranchers with quality seeds for their crop productions. Seeds are either company grown or company selected and purchased for particular characteristics. Once growing is started, crop inspections are made continually by the firms' field department to ascertain moisture and cultivating conditions of the soil, growth and quality of the plants and crops, freedom of diseases and pests, and estimated time of harvesting. Fig 2 indicates areas in lower California from which Consumers draws fresh produce for freezing.

Trucks are the principal transportation means for handling the crop between ranch and freezer. Crops are almost entirely picked up at the ranch by company owned trucks. A limited number of contract haulers are used at harvesting peaks. Crushed ice is used as a spoilage precaution and a pre-cooling media during the transportation phase. Practically all products are hauled in galvanized



Quality Control of West Coast Broccoli Processing

Another vegetable item available to Mrs. American housewife the year-round is broccoli. Frozen food packs of this product are made during the winter months in Southern California. Pictured in a spread above are a few steps involved in the harvesting, sorting and grading and other preparations of the product for market. At top left, harvesters fill galvanized bins mounted on trailers in the field.

Double decking tanks or hoppers are weighed in the field, prior to icing. These tanks, 40 x 40 x 40 inch, are constructed of 14 gauge galvanized iron with 5-inch casters. Portable hoists such as pictured, are located both at the field and the receiving plant to facilitate handling on-and-off truck transportation between the two points.

At top right, woman employee trims the stem from the broccoli head and splits the head for processing. From her bench, the head drops to a stainless conveyor which carries the product to the washer. Waste is disposed of to another trough conveyor where water moves the waste to a huge mechanical grinder disposal and from there to the sewer.

Broccoli is pictured ascending from washer in the photograph at the lower left. This washer uses approximately 600 gpm in spite of the fact that some recirculation is used to give velocity and turbulence to the water action in the washer.

After blanching and cooling, broccoli spears are packed in conventional food cartons for freezing. The procedure is to hand-pack to approximate correct fill. Then each carton is individually weighed and the weight corrected by adding or subtracting product. At lower right, samples taken at random are checked by a laboratory employee for bacterial count, thoroughness in blanching, flagmentation, and standards comparison.

iron hoppers which are scalded following each use. Spinach is probably the only product hauled in bulk truck-loads.

Food-O-Rama spectators this past year, witnessed the processing of brussel sprouts, broccoli and lima beans. Scenes along production lines are as pictured in this article.

Product Quality Controlled

Samples from each line in each processing building are drawn continuously throughout day and night shifts. These samples are graded by a full time trained employee in each operating building and during each shift. During peak seasons, four trained women employees have this full-time occupation.

Samples are drawn every five or more minutes, and are fully graded out in accordance with the United States Department of Agriculture Standards for "A" Grade. On certain products, California Consumers apply a standard of its own which in their opinion is higher than the "A" Grade. This continuous sampling of the product is at all times under the complete supervision of the USDA inspectors, in attendance full-time each shift, and Consumers' own Quality Control Chief.

TABLE 1 — NH_3 COMPRESSOR EQUIPMENT USED AT PASADENA PLANT, CALIFORNIA CONSUMERS CORP.

No.	Size	Type	Make
		Boosters, or Low Stage	
1	17 x 13 in.	Horiz. Double Acting Sgl. Cyl.	Ingersoll-Rand
1	12 x 14 in.	Horiz. Double Acting Twin Cyl.	Ingersoll-Rand
2	12 x 8 in.	Horiz. Double Acting Sgl. Cyl.	Chicago-Pneumatic
1	10 x 12 in.	Horiz. Double Acting Twin Cyl.	Ingersoll-Rand
		High Stage Units	
2	22½ x 15½ x 24 in.	Horiz. Double Acting	Ingersoll-Rand
2	16 x 24 in.	Vert. "A" Frames*	York Corp.
1	10 x 10 in.	Vert. Single Acting	York Corp.
2	9 x 9 in.	Vert. Single Acting	York Corp.
1	9 x 9 in.	Vert. Single Acting	Frick Co.
1	7½ x 7½ in.	Vert. Single Acting	York Corp.

*These machines converted from steam drive to synchronous motors.

Additional tests are made on the products in the firm's laboratory adjacent to the three processing buildings. Such tests establish completeness of blanch but avoidance of overblanching in each building, also maintenance of low tolerance bacterial counts on all processing lines, and strict control of no-tolerance fragmentation counts on all products being processed. In addition, for each product currently being packed, "cuttings" are conducted against all nationally advertised top quality labels.

High speed processing of perishable foods, whether it is in a meat packing plant or cannery involves the use of machinery which invariably has certain features with inherent dangers to the operator. Food freezing plants fall in this same category. California Consumers therefore employ a full time safety engineer and staff. Many modifications of equipment and process lines in the plant have come about as a result of their studies.

Safety Program

California Consumers Corporation has received considerable recognition for the effectiveness of its safety program. Safety awards have been won

Prime-Froz'n Lima Beans from Harvesting to Freezer — See Photos Page 17

Mechanized harvesting and processing brings today's frozen food produce to the consumer's table at prices unbelievably low for the detail work involved. A tractor, harvester and dump truck team up in the photograph at top left. To the right, dump truck unloads vines and beans in front of an automatic viner. Further to the right is pictured a battery of such viners used in the fields. Pods are automatically removed from the vines in these machines.

Photograph at the left center shows the operation of automatic clipper cleaners which remove the beans from the pods. Waste pods and vines are returned to the field where they are spread for the purpose of returning some nitrogen to the soil. The cleaners pictured are designed and manufactured by Huntley Manufacturing Co. They handle 3,000 pounds of beans per hour. California Consumers employ 10 of these machines at the fields and 5 at their own plants.

Batch weighing of the lima beans is usually done on a hopper scale at the vining stations. This practice insures the grower that they are being treated fairly by the processor in the matter of poundage. The photograph in the center of the spread shows how beans are batch weighed in the hopper and then delivered to the double decking tank. So many pounds of beans are placed over a layer of ice, then another layer of ice, another layer of beans, etc., with final layer of ice. The loaded hopper consists finally of five ice layers and four bean layers. There are approximately 500 pounds of ice used for each 1200 pounds of beans in each hopper.

According to the engineer of California Consumers Corp., Regis Gubser, it takes approximately 20 tons of ice each day at a vining station. Approximately 100 days are required to make, pull and store the ice which is used for a harvest. The ice is stored in an ice house at the vining station. A harvest usually yields 3500 to 4000 pounds of beans per acre. A typical planting would be approximately 50 acres about May 1st and 2nd, with a harvest on August 10th and 11th. Ice is shipped from the various Consumer plants to the vining stations in 300-lb block form in standard ice trucks. The main vining stations have full block crushers for each station and are manned by two men during the icing operations.

Right center photo shows the double decking tanks arriving at the food freezing plant. Note the layer of ice over the top of the product.

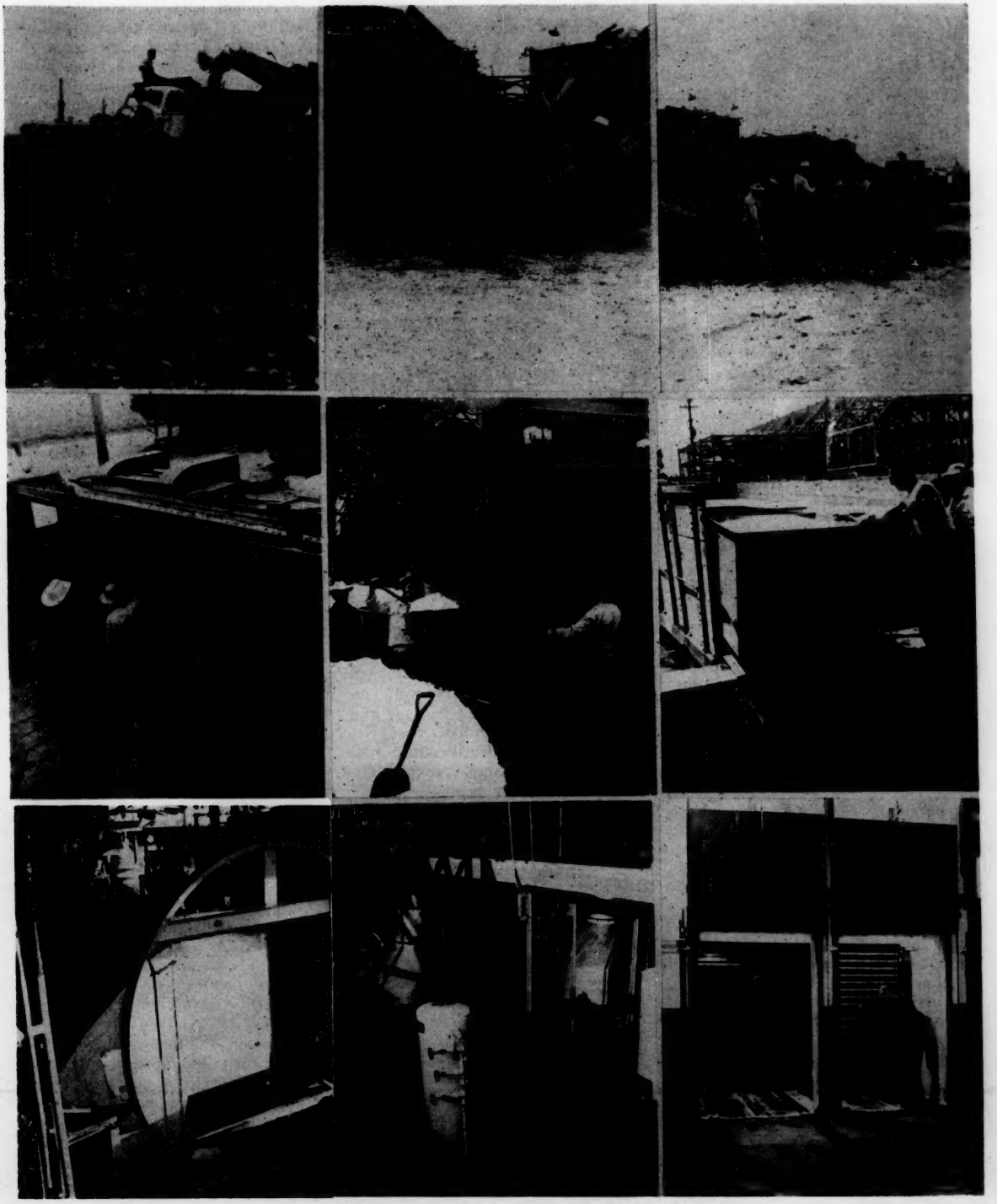
At lower left, the hopper or tank is up-ended by a special dumping device designed and fabricated by California Consumers' own engineering personnel. A single dump is equivalent to dumping 30 lug boxes at one time. The beans follow together with the ice on a stainless steel belt which conveys them from dump area. A grating is used to separate out large lumps of ice. The balance of the ice is melted by spray water.

Bottom center photograph shows two Key froth-flotation separators. They are manufactured by Key Equipment Co., Milton-Freewater, Oregon. These machines removed pod particles and loose bean skins. Foreign items float off and the beans settle to a conveyor. From there they move to inspection tables; then to blanchers and spray coolers. In blanching lima beans, the steam is delivered at 100 psi and the process requires approximately 3500 pounds of steam per hour.

The picture at lower right shows Consumer employee loading freezer tunnels with institutional packs of lima beans for blast freezing. These freezers handle 10,000 pounds of product per hour. That would be the equiva-

lent of 3500 3-pound institutional packages or 16,800 — 10 ounce domestic packages. This blast tunnel is equipped with two banks of aluminum coils arranged 4 ft. wide, 4 ft. high and 16 ft. long with a refrigeration capacity of 100 tons. Three-12 hp fans each circulate 30,000 cfm over the product.

Vertical rising doors at each end of the freezer tunnel were designed and fabricated by California Consumers engineering personnel. They are air operated to raise, using an air piston-ram operating with 100 psi air. Once the doors have risen, they lock and must be manually released by an operator. Actually the release frees the door so that it will return automatically to the closed position. The doors are of 2 x 6-inch framework with Fiberglas insulation and waterproof plywood finish. A similar set of doors open at the opposite end of the tunnel allowing the tray dollies to be removed, the product cased and moved to storage.



on both a national and local basis in the field of plant safety as well as fleet safety. From the National Association of Refrigerated Warehouses the company's cold storage plants received "No-Accident Award" Certificates in 1953 and 1954. They have also been earned for 1955.

Fleet Rates High in Safety

Locally, the company fleet has consistently been among the top three fleets in its division of the National Safety Council's Fleet Safety Contest during the past six years. The Company's Prime Frozen Food Packing Plant recently got into the safety limelight when they won a 3rd place in the National Safety Council's local industrial safety contest.

Awards and recognition are important, but probably the greatest benefits are experienced in the field of employee relations. Employees like to work in a safe plant, and are the first to take notice of any effort to help improve the safety of operations. The California Consumers Corporation is completely sold on the merits of its vigorous activity in accident prevention and will continue to seek ways to improve its safety record.

Refrigeration Equipment

All refrigeration compressing equipment at California Consumers Pasadena plant, where the Food-O-Rama was held, is of the reciprocating type. This is true of the booster compressors as well as the high-stage machines. Most are electric driven, although a few steamers remain for standby operations. Table 1 will indicate the size and nature of the compressors, and give the reader a very good idea as well of how well Consumers' Engineering Department functions in their maintenance chores.

Freezing equipment at the Pasadena plant consists of 1 — 8,000 lb. per hour continuous tunnel conveyor, 2 — 5,000 lb. per hour buggy tunnels, 4 — 1,000 lb. per hour plate freezers and 3 — 500 lb. per hour coil shelf freezers. Engineering, as a regular operating practice, maintains split plant operation, as Pasadena provides cold storage facilities and performs ice making in addition to their freezing operations. Cold storage demands at minus temperatures range up to 900,000 cu. ft. gross, while the ice plant turns out 200 tons per day. The firm also provides 240 tons of refrigeration per day via pipe line to the Caltech Wind Tunnel installation adjacent to Consumers' property at Pasadena.

Ammonia Pumps at Pasadena Plant

Consumers' has three liquid NH_3 pumps in use at this plant. The first one was a York 20 gpm pump installed in 1938 and has been in use every season since then. The York pump circulates NH_3 through a straight pipe all prime surface coil in a freezer tunnel. The other pumps circulate NH_3 through four plate type freezers. They can be operated either one at a time or both at the same time. One is a Fairbanks Morse 35 gpm with a mechanical seal, the other is a Roper 30 gpm with a packing gland.

Personnel required for operating the refrigeration plant include seven operators, two ice pullers, two maintenance men and one apprentice operator. Outside of the refrigeration plant, continuous productive and preventative maintenance is carried on by three welders, two machinists, two electricians, and six other mechanics. The firm performs all its own major overhauls. Engineering personnel are advanced thru various positions in the department as an incentive and reward for accomplishments.

President and General Manager California Consumers Corp. is Roy N. Hagen. Executive vice-president is Edward D. Sims. Other vice-presidents are Douglas S. Jardine, in charge of frozen food production, Lawrence J. Urban, manager, Los Angeles Cold Storage Company, a subsidiary, and Regis Gubser in charge of engineering. Gubser completed his term as president of NAPRE in 1955, at that association's recent convention in Los Angeles.

Modern Packaging Methods for Cut-up Poultry

ROBERT T. SHOCKLEY
Marathon Corporation

IT IS apparent that the frozen cut-up poultry being offered to the American consumer today is generally adequately and protectively packaged with good, clean design, all of which are essential in merchandising any product.

However, due to the complexity of some of the basic problems — and in spite of considerable research and developmental effort, a good package for chilled or ice packed poultry has not yet been developed. There is still a great deal of research that must be done. After the basic packaging problem is solved, only then can the poultry industry work toward standardization of package and product, and accomplish those elements of brand identification, self-service merchandising, product designation, appetite appeal. For a long time one of the major deterrents preventing the development of an acceptable package for ice packed poultry has been the shelf life factor.

Frozen Poultry Increases

Statistics on what customers spend for all products sold in food stores show that in 1952 the value of total domestic consumption of unfrozen poultry was listed as $2,386,000,000, compared with $342,000,000 for frozen. By 1954 the figures had changed to $2,309,000,000 for unfrozen and $403,670,000 for frozen. Thus we see in this period a decline in the total value of domestic consumption of unfrozen birds, and an increase on frozen. The signs definitely point toward a continuation of this trend — in red meats as well as in poultry. So it's clear that ice packed poultry will have to be packed in a fashion similar to frozen poultry if it is to obtain a place in the self-service supermarket of tomorrow, and maintain its position with the American consumer.

The present tray packs have provided a stop-gap solution for self-service of non-frozen poultry in supermarkets during the past few years. However, tray packs do not lend themselves to processor packing. They are difficult to pack in shipping containers because of their irregular shape, and they waste space. In addition, tray packs often have an unappetizing appearance because of staining, they don't stack well for self-service merchandising, and they waste cabinet space, which is at a premium today and probably will be for years to come.

The package should be regular in shape to provide the most economic shipping container per pound of product and to minimize transportation, storage and display requirements. The regular shaped package is a prerequisite for modern self-service display and merchandising.

Today supermarkets sell over 50 percent of all food store volume. The printed design on the package must lend itself to this type of retail merchandising and meet all of the requirements of self-service selling. The major factor in getting shoppers to buy the product is the self-selling package.

Testing Facilities For Refrigerated Warehouse Construction

Concluded From February Issue

H. C. BROWN JR.
Armstrong Cork Company
Research & Development Center
Lancaster, Pa.

On-Grade Vapor Barriers

In recent years a theory has been advanced that if the vapor barrier beneath an on-grade freezer floor is removed, any moisture that should be present beneath the floor will diffuse upward due to vapor pressure differential, will pass through the concrete floor and eventually deposit on the cooling coils in the room. It has been stated, and quite rightly so, that frost heavage has not been experienced on any job where floor vapor barriers were omitted. Although there have been installations made where the concrete wearing floor has been poured directly on-grade, it is still a matter of conjecture as to whether the above theory applies or whether insufficient time has elapsed for conditions prevalent for heavage to occur. And, too, it is not known whether a poured concrete wearing floor under the conditions existing in a freezer would act as a vapor barrier or not.

Tremendous savings could be realized in the cost of constructing a refrigerated warehouse if the floor insulation and vapor barriers could be omitted. Therefore a series of tests have started in the dual temperature test room (Fig. 1) which it is hoped will shed some light on this complex problem. Unfortunately, test work is not sufficiently far along to reach any definite conclusion. Nevertheless, test methods and some preliminary indications may be of interest here.

A series of openings somewhat over 2 × 2 feet have been cut through the concrete wearing floor in some areas of the inner test room. Fig. 10 shows such an area with a test pan embedded in the floor insulation. The cut through the wearing floor has been made at an angle so that

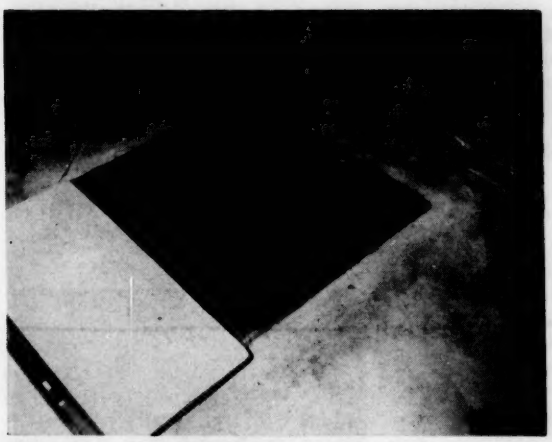


Fig. 10 — Test unit in place within dual temperature test room for floor test with sand-filled fan embedded in floor insulation.

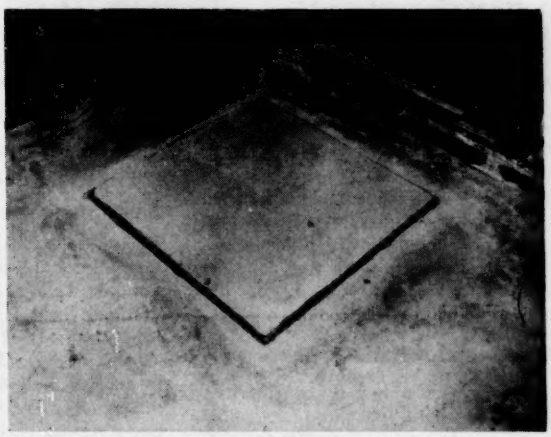


Fig. 11 — Sand filled pan in floor test with concrete lid positioned and edge-sealed.

Fig. 12 — Placing of the perforated pan with fiberglas pad ready for sand, for the simulated on-grade moisture diffusion test.

Fig. 13 — Appearance of bottom surface of perforated pans over sand fill after 15 week test at minus 50 F.

Fig. 14 — Frost accumulation on bottom surface of perforated pan over stone fill after 15 week test at minus 50 F. Note method of weighing.

Fig. 15 — Structural tests with I-Beam penetrating a free standing wall—This picture was taken from inside the cold room.

whenever the removed slab is repositioned it can be gasketed to provide a complete vapor seal.

The test pan embedded in an opening cut into the insulation consisted of a galvanized pan 2 × 2 ft. by 4 in. deep in which sand of a known moisture content was placed and the entire contents weighed. If the theory of vapor diffusion is correct, after the concrete lid is replaced as shown in Fig. 11 and edge completely sealed, the moisture originally contained in the sand should slowly migrate upward, diffuse through the concrete pad and eventually deposit on the cooling coils in the room.

Similate On-Grade Structure

An impermeable pan beneath the wet sand would not produce conditions similar to an actual freezer. For this reason tests included a pan with a perforated bottom as shown in Fig. 12. In order to prevent loss of sand through the perforations, a thin thickness of Fiberglas was placed immediately above the perforated pan. In this test an opening was cut completely through the insulation and sub-slab enabling even the fill beneath to be removed. In this way it has been possible to include different types of fill in the study.

Although these studies are still preliminary, certain visual comparisons after a relatively short exposure time might be of interest. Fig. 13 shows the frost deposit that occurred beneath the perforated pan over wet sand after a 15 week period in which the room was kept at a minus 50 F. temperature. It is interesting to note that although the frost deposit was relatively small, around each perforation there was a half inch diameter void area completely ice free.

Considerably greater ice deposit on a perforated pan for the same period of time over a stone fill is depicted in Fig. 14. Shown in this picture as well, is the method employed to weigh the pans while still subjected to freezing temperatures. The present photograph was taken before the ice beneath the pan was scraped off to measure any change in weight of the sand inside the pan.

Steel Structures Studied

Studies of beams and other metal projections through insulated partitions or walls are being made to investigate heat leakage and temperature gradients. The 12 inch I-beam shown in Fig. 15 has been installed in such a manner that it penetrates through the exterior surface of the free-standing corkboard partition. In Fig. 16 is shown the arrangement of heat meters on the exterior wall surface by which heat transmission can be measured.*

In the photograph, the large meter placed over the end of the beam has been removed for illustrative purposes. Comparisons are presently being made with different thicknesses of insulation extending varying distances into the cold room to determine heat loss fluctuations. The small single meter in the lower righthand corner (Fig. 16) has been placed over an electrical conduit to determine what effect insulation plays in the heat loss and temperature gradient through a metal projection of this type.

(*A heat meter is a device which can be adhered to the wall surface without affecting heat flow appreciably, and by electrical measurement, the heat flow through the wall and meters can be determined.)

Study Air Blasts on Walls

Another investigation started is a study of the effect of air impingement against insulated walls with no interior finish, compared to applied finishes of different types. On an exposed corkboard panel in the inner room at a minus 50 F. temperature, an ordinary fan impinging directly against the surface provided some idea of air impingement effect which is interesting.

At an air velocity of 1100 ft./min.,

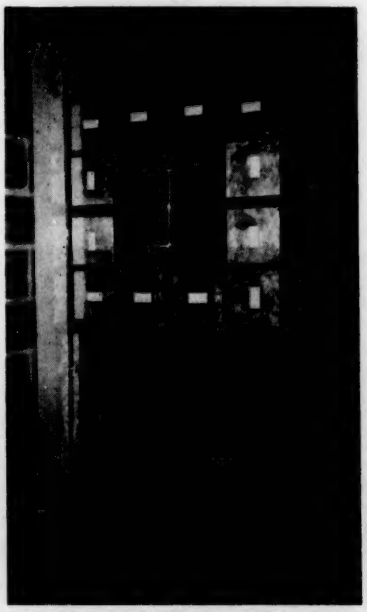


Fig. 16 — Outside view of I-Beam penetrating free-standing wall. Note large heat meter over end of I-Beam is removed; small heat meter in lower right corner over a conduit penetration also under test.

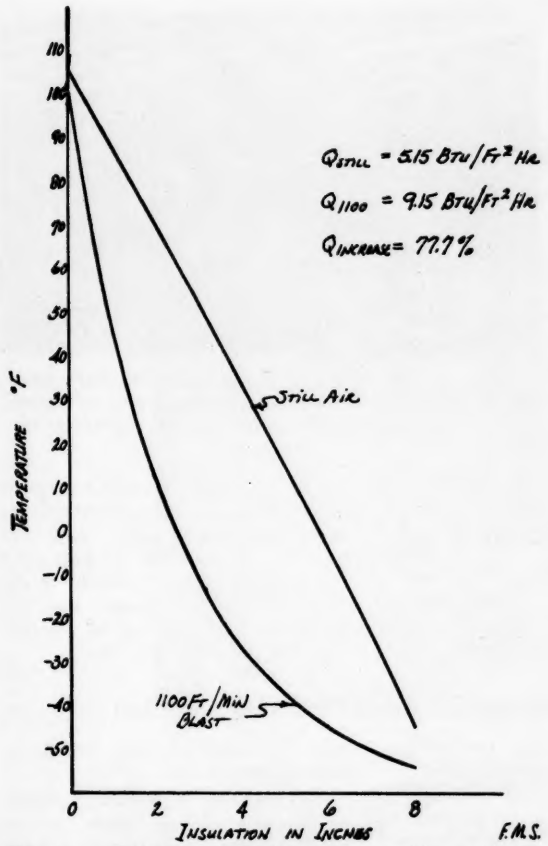


Fig. 17 — Effect of air impingement on 8-in. corkboard wall without finish.

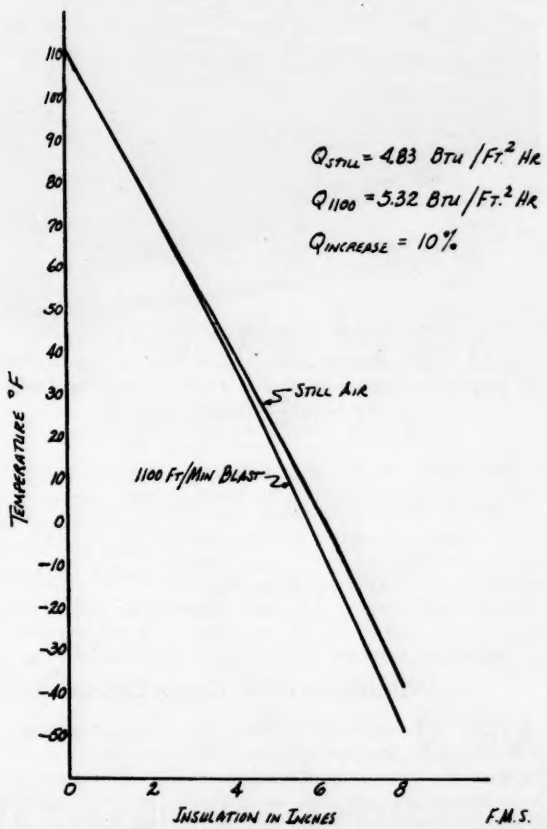


Fig. 18 — Effect of air impingement on 8-in. corkboard wall with finish of filled synthetic resin emulsion.

impinging directly against an 8 in. thickness of corkboard erected in two layers against a backplastered and primed cinder block wall, the temperature gradient and heat loss is as indicated in Fig. 17. The effect of no finish may be compared to an interior finish as shown in Fig. 18. In this particular case the interior finish was a filled synthetic resin emulsion about 1/8 in. thick.

Other Structural Materials Insulation Applications Tested

Thermal data is being obtained in the various components of the outer circular building (Fig. 1) as well. For example, the thermocouple installation illustrated in Fig. 19 shows one of the locations used in measuring wall temperature gradients under outside conditions with various interior temperatures. The thermocouples placed in the roof slab as shown in Fig. 20 are being used to plot temperature gradients in the roof deck.

Fig. 19 — Thermocouple installation in exterior wall of outer building shown in Fig. 1.

Fig. 20 — Placement of thermocouples in poured concrete roof deck for testing purpose.

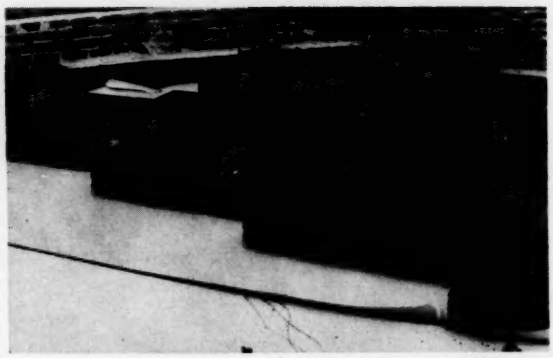


Fig. 21 — Experimental roof panel tests are conducted on placement pattern as well as type of accessories used in the insulation application.

Fig. 22 — Sight tubes in roof insulation, outer building. Penetrations are made to various levels to observe movement of materials under varying ambient conditions.

Other tests on the outer building include studies of movement of roof insulation installed in different ways, and subjected to outside temperature fluctuations day to night, or winter to summer. Fig. 21 illustrates an experimental corkboard roof panel, and Fig. 22 the means used to measure minute movement of the two insulation layers. It should be noted that the reference points beneath the sight tubes are visible after the built-up roof is installed.

As the reader will appreciate, with a refrigeration system installed for this facility, there is ample extremely low temperature piping to afford excellent opportunity for conducting tests on pipe insulation. In particular where the pipes pass through the annular space between rooms, tests are run under a wide range of ambient temperatures and humidities.

Wildlife Service Gives Optimistic Report on Food and Fisheries Situation

A REPORT by the U.S. Fish and Wildlife Service of The U.S. Dept. of the Interior is devoted mostly to fishery products, but starts with a general discussion of the food situation.

The Food Situation

Meat supplies it states, should continue to be plentiful in 1956 with consumption remaining at the 1955 rate of 161 pounds-per-person. Consumer demand will continue strong during 1956. Retail prices in general will average about the same as in 1955, with lower prices expected for pork and higher prices for other meats.

While the total production of beef will be smaller than in 1955, the supplies of the better grades of beef should equal or possibly exceed that of 1955. A slightly smaller production of veal is expected. The supplies of lamb and mutton are expected to be about as large in 1956, and prices will be about the same as in 1955. Larger supplies of pork will be available in 1956, with most of the increase occurring during the first half of the year.

More eggs will be available in 1956, as many poultry producers have increased their output. Lower feed costs and higher returns during 1955 from poultry products have encouraged some expansion in egg production. Prices of eggs are expected to average lower than in 1955. The seasonal demand for eggs for storage is expected to be smaller in 1956.

The supply of chickens and turkeys in 1956 is expected to be somewhat greater than in 1955. While the number of turkeys carried over into 1956 was smaller, an increase in production is expected this year. Poultry prices will be held down in 1956 by the large supplies of competing meats and other proteins.

Supplies of all foods are expected to again be abundant. The strong demand for foods will continue so that consumers, on a per person basis, will use about as much in 1956, as they have during the past year. Retail food prices will not change much from present levels except for seasonal variations. Farm prices may decline slightly, while those of fishery products will increase some during the first quarter, due to seasonal fishing limitations and lower inventories at the beginning of 1956.

Fish Products

Production of fish during the first quarter of 1956 will be at a low level in most fishing areas of the United States and Alaska because of adverse weather conditions. The principal fisheries in operation will be the ground-fish fishery in New England, the oyster and shrimp fisheries on the Atlantic and Gulf Coasts, and the sardine and tuna fishery of Southern California. Demand will largely have to be met from the cold storage holdings, and mostly from warehouse stocks of canned fish.

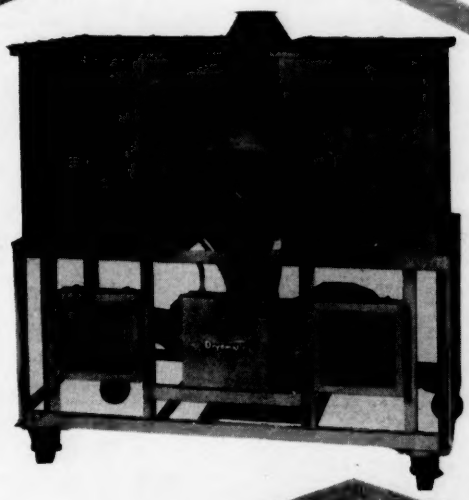
The holdings of fishery products on December 1 were eight percent less than those a year previous. However they were about the five year average for the past five years. Stocks of flounder fillets, whiting, spiny lobster tails and mild-cured salmon were above average while those of cod and haddock fillets, halibut, salmon, swordfish, shrimp, freshwater varieties, and salt herring were a million pounds or more lower.

The Index for Fresh & Frozen Fish rose eight points during October and was at a higher level than it has been for the past two years for November largely because of the low production of haddock. The canned fish index declined one point during November to 102.6 due to lower quoted prices on canned tuna and Pacific sardines.

Fish Sticks

Fish stick production for the first nine months for 1955 exceeded 1954 for the same period by 45 percent. Blocks and slabs held in cold storage on December 1, totalled 15,964,000 pounds, over 3,400,000 pounds more than was held on the same date in 1954. Year-end production of fish sticks, will total nearly 68 million pounds if the monthly average in 1955 is maintained and an expected increase in production during the fourth quarter develops.

designed especially for
REFRIGERATED WAREHOUSES



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Training Course on Management and Operation in Warehouse Operations

CERTIFICATES on advance training in refrigerated warehouse operation and management were presented to 79 American warehouse personnel at Purdue University Thursday, January 26, by F. D. Newell, Jr., President, National Association of Refrigerated Warehouses, Inc. This activity culminated four days of intensive educational programs and training seminars arranged and conducted by The Refrigeration Research Foundation and National Association of Refrigerated Warehouses.

Dean H. J. Reed, Purdue University

The conference opened Monday, January 23, in the East Faculty Lounge of the Purdue Memorial Union Building, with an address by Dean H. J. Reed of Purdue's Agricultural School. Following this welcome address, the conference plunged into a 3-hour educational program, followed in the afternoon sessions by group discussion meetings or seminars on the previous morning's topics. These 3-hour sessions were followed each day by a special speaker or program on one of the current problems of the industry. Another such topic with group discussion was held each evening.

Monday's program included presentations by John Mock, management consultant, Evanston, Illinois, Ray Keiser, NARW's Counsel and Manager, Industrial Relations Department, Washington, D.C., and Sam Shapiro, Manager, Linen Supply Association of America, Chicago, Ill. Mock's topic was the Sales of Warehouse Services, while Keiser presented a discussion on Industrial Relations. Public Relations was covered in an inspirational manner by Mr. Shapiro.

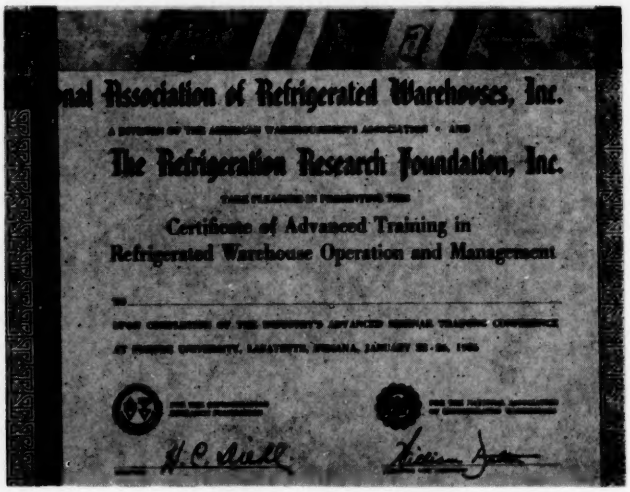
On Tuesday, the speakers were Burns Speer, Merchants Ice and Cold Storage Company, Inc., Louisville, Ky.; V. C. Patterson of Patterson and Davis, Philadelphia, Pa., and Paul B. Christensen of Northeast Cold Storage Corporation, Portland, Maine. Topics included mechanical handling, freezing of commodities, and control of stored products environment, respectively by Speer, Patterson and Christensen.

Warehouse operation and management, and functional packages, were the two topics discussed Wednesday, January 25. Speakers were Wm. Ready of Indiana Terminal Warehouse & Cold Storage, Indianapolis, on the former topic, and Charles Zusi, President, Container Laboratories, Inc., Chicago, Illinois, on the latter topic.

Association Functions Noted

Thursday morning's sessions got under way with a panel of NARW and TRRF personnel showing conference participants how to use TRRF and NARW information in their business. Ray Keiser instructed attendants in the use of the NARW legal division in connection with their labor problems and legal demands. Francis X. Brown, explained other services rendered by NARW with special emphasis on the various publications circulated by the Association as aids to their business and to their firm's public relations efforts.

H. C. Diehl, Director, TRRF, presented a brief history of the Foundation, stating the objectives of this "Not For Profit" organization (see January 1956 IR, Page 28). He was followed by his assistant, William J. Hoover, who showed the conference participants some practical examples on how the foundation functions in their behalf as well as in the interest of the general public.


Association of Refrigerated Warehouses, Inc.
The Refrigeration Research Foundation, Inc.
Certificate of Advanced Training in
Refrigerated Warehouse Operation and Management

Facsimile of certificate awarded to those who completed advanced Training Course

Concluding papers presented at the conference were one on Office Procedures and Practices by James H. Kuehn, president of Wisconsin Cold Storage Co., Milwaukee, and Engine Room Practices and Procedures by Bert C. McKenna, chief engineer, Central Cold Storage Company, Chicago.

General topics presented at the special afternoon and evening meetings included industrial relations, telephone techniques for operating firms, accounting methods and practices, commodities in storage, food irradiation practices and the future of refrigerated warehouses. Speakers Mock, Keiser and Shapiro, together with NARW's Executive Vice-President, Bill Dalton and TRRF's Director, H. C. Diehl, handled the special discussion on industrial relations at the wind-up of Monday's program.

Tuesday's wind-up was a preview presentation by William Baker of Produce Terminal Cold Storage, Chicago, on accounting. Baker's paper,

in its entirety and supported by industry surveys, is to be presented at the NARW Convention in Los Angeles, April 9-13, 1956. Mr. Baker's ready wit spiced a usually dull topic and provoked considerable discussion by the participants.

Commodities in storage was actually handled by another panel, consisting of Paul Vollmer, Produce Terminal Cold Storage Co., Chicago, David Tyson, City Products Corp., Chicago, Dr. J. C. Woodruff, Georgia Experimental Station, Atlanta, Ga., and Director Diehl. The food irradiation topic was also handled by Diehl and his assistant William J. Hoover.

Dutch Diehl and Bill Dalton in Conference

Noted particularly about this conference was the very businesslike manner in which it proceeded and the attention to duty on the part of the participants. The only social activity which took place officially was a get-together party Sunday evening, January 22, at the Fowler Hotel in Lafayette. A second informal gathering was arranged by Frank Brown and William Hoover for a number of delegates interested in attending the Iowa-Purdue Basketball game which was played on the campus Monday evening, January 23. Delegates agreed to advance their evening discussion period into the dinner hour in order to attend the game, which Purdue lost to Iowa in the very last few seconds of play.

TRRF Research at Purdue

In welcoming the conference participants Dean Reed took note of the fact that TRRF had made a $10,000 grant to the Agricultural School's Research Division for purposes of investigating the effect of atmospheric control, air purification, and air conditioning of refrigerated warehouses on the quality of commodities in cold storage. Participants showed a keen interest in the Dean's comments on this topic. It was noted that the project has just gotten under way and that no conclusive results are immediately forthcoming.

Salesmanship

Management Consultant Mock, presented the conferees with a simplified salesmanship course. He outlined fundamentals of warehouse space selling. Using the word "Ideas", he broke up each letter into three steps, showing an approach for each step, the common interest between the space buyer and seller, and how the seller can bring out a favorable response on the part of his intended client. Participants received not only a practical instruction on how to sell space, but were impressed with the importance of selling in their line of occupation.

Labor Relations

NARW's industrial relations representative, Ray Keiser, emphasized the importance of the supervisory employee in this very critical field of today's warehousing practice. He said the supervisory staff should be educated to the fact that they are the liaison between top management and the man employed in the enterprise. He emphasized that they are a two-way link and have a loyalty to show both up and down in the chain of command. He emphasized that they can win the loyalty and support of their men "when they can safely rely on your word".

He emphasized also that management should consult more often with their supervisory personnel for practical ideas in regard to labor relations, and more especially in human relations. Also presented by Keiser were five qualities of leadership desired in the supervisors. In the session he also discussed automation and "hot cargo", and wage differential between private and public warehouse employees.

Sam Shapiro, borrowed from another trade association, emphasized for the conference participants that "public relations is human relations". His discussion emphasized the fact that human relations start right at the supervisory employee's home. He indicated that an individual must sell his family on his role, and on the importance of his company and job to the welfare of the community. Once a supervisor has sold his own family, he will find it easy to sell his associates and employees. In counselling the conferees he advised them to learn to listen, to give the feeling of recognition to others in doing so and quoted from Ralph Waldo Emerson in making his point. "What you do thunders so loudly, I can't hear what you say", applies today in the opinion of Shapiro, as it did in Emerson's day. He urged the delegates to remember the free time available on the local radio and TV stations and take advantage of such time to explain how their industry safeguards the health of the nation.

Commodity Handling

In his presentation on materials handling, Burns Speer, presented a graph on the blackboard and compared various means of unloading and simple delivery. He indicated the time and cost involved in doing it by man power alone; in a one man operation using a 2-wheel truck; in using a 4-wheel truck; in using a conveyor; in using a fork lift conveyance with palletized operation. His presentation was very convincing evidence that mechanized handling in some form or another can improve warehouse efficiency.

Speer presented some "rules of thumb" for warehouse supervisory employees to apply in determining when mechanized handling is advantageous. He divided the means of mechanized commodity handling into classes and groups, and discussed their advantages. Some practical figures were brought up in his discussion such as the "rule of thumb" of 50 cents per hour cost of operating a fork lift truck. He pointed out that with some tendency to lower occupancy, there is an opportunity for warehousemen to try out improved handling methods; that is, they might possibly lower their costs of handling by bringing down and spreading out their merchandise. He suggested that the public warehousemen might learn a bit on commodity handling from the wholesale grocery people.

Construction Chalk-Talk

Consultant Patterson brought out some advantages, practices and current trends in the construction and operation of freezer and refrigerated building facilities. To emphasize his suggestions, which should be considered in connection with alterations, additions or new construction, he illustrated the planning of an "ideal" freezer warehouse by means of a chalk-talk. He brought out such important points as introduction of heated floors and pressurized low humidity air for vestibules used in pallet operations.

Ground level operations with reduced level railroad trackage added to accessibility from one portion of the plant to another by means of

Opening session of advanced training course

Panel discussion of commodities in storage

mechanized devices according to Patterson. He pointed out that the ideal situation would be to have one vestibule to the room which would avoid through-drafts. He also commented on the introduction of storage sales for bulk frozen items such as trays of bulk commodities right in the freezer storage. He emphasized the use today of three-temperature systems and the use of pre-cooling before commodity freezing. Two-purpose coolers were also commented on, as well as the grouping of functional buildings around the compressor or machinery room for reducing operating costs.

Christensen, at the Tuesday morning session, commented on the possible revision of the TRRF commodity storage tables to provide use of such tables in allowing for higher relative humidity in storage with faster air movement within the spaces. He commented on the success of storing onions at 90 r.h. with movement of the air within the storage space at 100 fpm, as compared with the recommended practice of storing them at 64 percent r. h. in still air.

In this regard he referred to a recent paper of the 9th International Congress of Refrigeration in Paris, pointing out how the French have come up with a concept for storing at high humidities, and transferring the commodity at the appropriate time to a dry storage for improvement in flavor and odor before the product moved on to consumer distribution. Christensen's talk also covered source of heat gains in storage, pointing out to the conference attendants just how they can help prevent heat gains through more efficient performance of their operating functions. Attendants were given some practical instruction on time and temperature variations in storage and reminded that "frozen goods have a memory".

Warehouse Log-Jams

Delegates to the conference received a review of the primary functions of warehouses and receiving, storing and delivery of commodities for their plant from William Ready. He cited how the operational supplements by NARW contained good practical items of instruction for the supervisor of a refrigerated warehouse. He further suggested that it might be good practice for supervisors to learn what the customer thinks of the operation. He went into the various complaints which customers normally lodge with management such as allowing commodities to stand for an unreasonable length of time on the docks. According to the speaker, the supervisor's personnel should know the limitations of their elevators.

Ready emphasized the lack of proper record-taking on receiving often resulted in improper storage and damage claims against management. His discussion covered housekeeping, pallet exchanges and delivery criticisms, such as in processing orders, poor judgment in selection of trucks or cars and pre-cooling. His remarks were supplemented by Director Diehl in the suggestion that many firms could invest in a Polaroid camera for use around the warehouse in obtaining evidence of damage, for use in emergency and safety promotion, and for valuation purposes. He also commented on a new development in packaging which would allow insertion of a standard thermometer through a marked hole in a frozen commodity shipping case for the purpose of taking temperatures between the cartons, research at the WURB, USDA, having established that there is a steady relationship between product temperature and the temperature taken as noted. The new arrangement is non-damaging to the product and should be acceptable to most buyers.

Packaging Advice Given

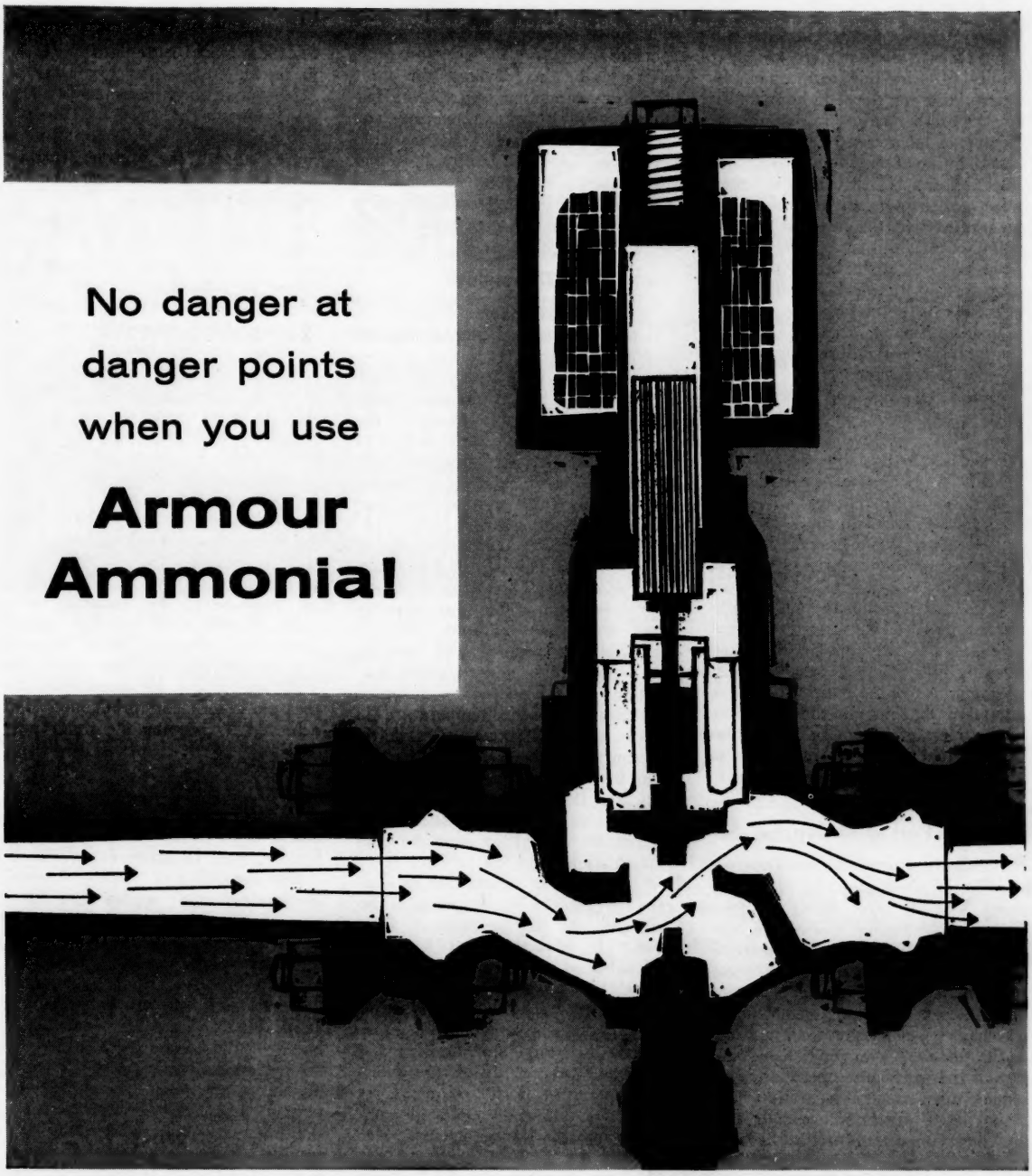
Container expert Zusi discussed the fundamentals of packaging. In addition to outlining the basic types, he discussed their purposes, their functions and engineering, and their insulation. Types discussed were wood, paperboard, plastic, metal, glass and textiles. Recognizing that the warehouseman was not the party responsible for the container selection when the commodity is prepared for storage, he encouraged them to educate their clients to the fact that they could be helpful in selection of containers for the storage of any commodity in their warehouses. Warehousemen could be useful to their client in explaining to the container manufacturer what the package must do, in what kind of surroundings it will be stored, and how it is to be handled.

Further, warehousemen can suggest to their clients that a reliable laboratory be engaged by their container manufacturer to back up their recommendations with tests. Warehousemen should learn what the tests mean, what they do and what can be learned from them. He pointed out how laboratories simulate actual storage conditions (thus saving their clients considerable expense) then write specifications for such clients, and verify specification compliance. In this discussion he acknowledged that moisture problems were difficult to solve probably due to the fact that there is no well developed or truly reliable means of determining relative humidities in refrigerated storage.

Office Forms

Consultation possibilities in the various forms used in the refrigerated warehousing industry was the principal topic of James Kuehn's Thursday morning presentation under the heading of Office Procedures and Practices. Acknowledging that no office operation is suitable for all industry plants, he pointed out that three objectives in forms and their execution should be kept uppermost in the minds of management when designing their business papers. The factors or objectives are speed, accuracy and efficiency. His discussion was backed up by exhibit of various forms used in his warehouse and that of another NARW member in Minnesota. He discussed in detail, forms used on the dock and in the warehouse in connection with receiving and proceeded from there to the office covering form routine, and devices for form keeping.

Some comments were made on provision in the various forms for col-



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lecting data in connection with U.S. Government reports and the desirability of providing form space for determining ton per man-hour figures for the firm's own use in determining its unit of labor costs. The discussion also mentioned pound-and-ounce adding machines, which Kuehn indicated were worth their weight in gold. He mentioned that the tape off the machine is in duplicate. The original is fastened to the pallet of merchandise right on the dock and the duplicate goes to the main office. His talk also covered phone order forms; their time saving possibilities and avoidance of discrepancies.

Other items under discussion were the maintenance of "little black books" where the customers are cross-indexed both by alphabet and by broker. Any unusual procedure in connection with the customer's account is also noted in the book; such as, requests for numerous carbon copies of shipping orders. A large portion of Kuehn's talk was given over to use of automatic billing machines, their advantages and disadvantages, and their use in daily and monthly billing practices. One disadvantage, he pointed out, in the use of automatic machines is the possibility of the operator becoming ill and thus placing the firm temporarily out of businesss until the party returns to work.

Engineer Part of Enterprise

Following Kuehn on the program was Bert C. McKenna, 1st vice-president, NAPRE, and chief engineer, Central Cold Storage Co. of Chicago. According to McKenna the heart of the refrigerated enterprise is the engine room and its personnel. Other departments like top management, warehouse supervision, accounting, traffic, etc. are the mind, arms and legs of the warehouse operation. Personnel, their safety, operation and maintenance practices are four factors most important to healthy well regulated engine room operation. Procedures followed in executing these practices contribute to the economic well-being of the enterprise.

Unseasonal shut-downs due to lack of maintenance, according to McKenna, detract from economic health of refrigerating industry the same as in any other business. Active and accurate machinery history and maintenance records assure the most reasonable preventive measures. Operation efficiency is not only dependent on simplified and useful logs, reviewed periodically, but also on unique practices brought about by local conditions, such as scheduled shutdowns due to curtailed power periods.

His talk also covered the topic of safety as another contributing factor in operating maintenance and efficiency. Personnel relations within the engine room family and other departments, contribute to continued safety, efficiency and overall welfare of the refrigerated enterprise, in the opinion of the speaker.

More Panel Discussions

Two special panel sessions on Wednesday covered the storage of commodities and irradiation of food. On the first panel, Director Diehl pointed out that there are several publications available to the warehousing industry on the storage of various products, including the U.S. Department of Agriculture Handbook 66, and the TRRF Commodity Storage Manual.

In the meat department, David Tyson commented on the importance of knowing whether or not the product is received at the warehouse in fresh and good condition. He emphasized the necessity of keeping low temperatures and to avoid fluctuation. Dr. Woodroof commented that fluctuations in temperature in effect are mild thawings and refreezing; and also reflect in relative humidity with a drying effect. He indicated that a fluctuation of 10 F could quite reasonably amount to a 10 percent change in moisture content of air around the product.

P. A. Vollmer commented on shell eggs in storage with emphasis on the room for improvement in fiber cases. He indicated that his firm had obtained best results in the storage of this commodity with an 83 to 85 percent relative humidity and a 30 to 30½ F temperature. From the practical standpoint, he indicated that one way to avoid variations of temperature is to refrain from introducing too many units of commodity into the storage room at any one time.

Also under discussion by Vollmer was the storage of cheese. He concluded that the best results are to be obtained by following the TRRF Manual, although Tyson pointed out that some freezing of process cheese takes place. Butter storage is recommended at −10 to −15 F.

Woodroof Shows $ in Nuts

Dr. Woodroof's assigned discussion in the panel operation was on nuts and nut products. He cited how the price of pecans fluctuated from 38 cents to $1.25 per pound. The figures are based on a 10-year survey conducted by candy makers and confectioners. Cold storage of these nutmeats has resulted in a leveling off of the price of this commodity. The same is true of filberts. However, he indicated that we had to know more about the proper storage humidities and packaging requirements for this product.

Some discussion on the storage of candies came up regarding condensation and their protective packaging. Some investigation is under way, according to Dr. Woodroof, into the freezing of hot roasted peanuts. The canning industry learned that vacuum process of this product doubles the life of the commodity. It may be that freezing will extend that life and also preserve the hot roasted aroma.

One problem presented to the panel is that of glazing meats. Mr. Tyson tackled the problem and indicated that his firm finds meat glazing a profitable enterprise. He indicated that the glazing was done by machinery, the product being twice dipped and stored in paper lined bins. Practice is to store at least 3,000 pounds, then spray the stack and repeat. He mentioned that the most efficient production was achieved by keeping the water near 32 F.

Irradiated Foods

Possibly the most interesting round table discussion of the conference was Director Diehl's moderated discussion of irradiated foods. Responding to questions, Diehl pointed out that most of the reports on irradiated foods today are based on publication results immediately after the processing, and to date there has been very little check against the actual shelf life of the commodity. Some of the questions presented by the conference participants as a result of their newspaper sources, Diehl termed as science fiction writing, pointing out that many irradiated products have a notorious off-flavor, especially those of high protein content.

Fire Destroys Juneau Plant

A FIRE fed by oil-soaked fishing gear roared through a Juneau cold-storage building at Juneau, Alaska, causing about $250,000 damage. There were no injuries reported, but the fire destroyed a loft where most local fishermen stored their equipment.

A box factory inside the loft was destroyed as was a packing plant, fish house, a salmon and shrimp cannery and a meat market.

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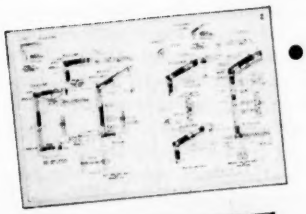

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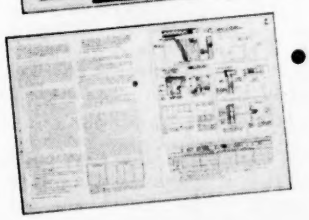

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NATIONAL ASSOCIATION PRACTICAL REFRIGERATING ENGINEERS

Oscar Putts Impresses a Customer

Field Correspondence

DONALD A. PARKHURST

(With apologies to Mr. Alexander Botts)

Some readers may detect a bit of satire in author Parkhurst's presentation of Oscar Putts, compressor salesman deluxe, in this adaptation of a style from a popular series of fiction. Recommended as a variation to the usual practice of verbatim presentations of NAPRE papers, is this dialogue feature. Engineer A. E. Reinert, quoted freely by salesman Oscar Putts in the text, is none other than the A. E. Reinert, a Director of the Green Bay Chapter, NAPRE, who arranged for Parkhurst's presentation as a part of that chapter's speaker program during the 1955 term. The presentation was also made before Chicago Section, ASRE, in 1955.

Mr. Philo Jerome Whetmore, Pres.,
X-1008 Machine Company
Westmoreland, Pa.

Dear Boss:

FELLER came in my office this morning said he was from Indian Territory Wisconsin, which I think is near Milwaukee, and I'm not so sure he was an Indian. Says his name is Reinert and sorta get the feeling maybe he is from around Milwaukee, or maybe Green Bay, on account of he looks like my uncle Herman Steindlebrau, on my mother's side, who didn't live near Green Bay but was a fine Dutchman from Pennsylvania.

He asked if I could tell him what a "Rotary Booster" is. Well, that being what you told me, I was out solely here for sent, I asked him to sit down and have a cigarette. He smokes King Size Jaberwockies which are very good — but his lighter — now I can never understand why anyone wants to carry a lighter. I honestly believe it is ten times harder to find a man with a can of lighter fluid in his pocket than it is to find one with a spare book of matches.

Of course, you can't just answer a question like that! Like you said when you sent me into the open Western Spaces Great — the land of opportunity — "always your sales talk at the beginning, start", so I said —

"What is *any* booster" — and answered my own question.

Booster Defined

"It is a gas compressing device intended to compress a refrigerant gas through a small compression ratio and usually used a low specific pressure. To be more practical, it usually accepts a refrigerant gas at some pressure between 15 inches vacuum and 0 lbs pressure and discharges it at something in the vicinity of 25 to 35 lbs gauge pressure."

This I memorized, Boss, as you can tell and your training efforts on me weren't wasted, and Mr. Reinert couldn't help but be impressed like you said.

Then I opened my manual, and if I do say so, Mr. Reinert to every word listened. Here is what I said — he said — us said — anyway—:

He:— I know, but *what is a Rotary Booster?*

Me:— Look at Fig 1 and 2. Fig 1 illustrates a typical low temperature application. Now see Fig 2. This shows how we can, by increasing from 250 to 450-hp (less than twice), increase the capacity from 60 to 195 tons (more than three times). If we tried to do the same job with more single stage equipment we would necessarily use six—10 x 10's or 750-hp! Also three condensers and an inefficient operating ratio!

Seeks to Lower Temperature

He:— Let's try the same thing only keep the tons constant and lower the temperature. Then what happens?

Me: —Here on Fig 3 we show how to drop the temperature from −15 to −25 F without change in the bhp. But note that the connected hp is reduced!

He:— S'pose I want to do both?

Me:— My boss says greedy customers should study Fig 4.

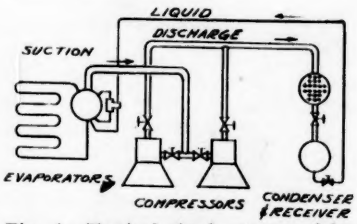

Fig. 1—Typical single stage refrigerating system. Bhp/ton for this 250 hp system with 0 lbs suction, 18.5 psig discharge, is 2.84.

(Boss, I know you didn't say nothing like that at all, but in all fairness you cannot claim that I am not ambitious and hope to be boss myself some day, and as Mary Roberts Reinhart in her book says, "Think bossy if you expect to be bossy", — well, it could have been Sinclair Lewis.)

He:— Gee whiz! — None of that is anything that cannot be accomplished by a reciprocating booster.

Me:— Gee whiz is right!

Gee whiz, it is smaller ton for ton.

Don A. Parkhurst is vice-president and chief engineer of the Burge Ice Machine Co. of Chicago having been with the company for over 20 years, except for military service as Commander of the 816th Engineers Aviation Battalion during World War II in the European Theatre where he built airfields for the Ninth Air Force. He is Commander of the 416th Engineer Brigade, a Reserve Unit in Chicago, and holds the rank of Brigadier General. He is a graduate of the University of Illinois.

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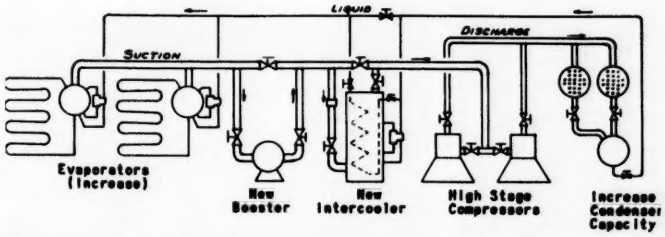


Fig. 2 — Use of a booster compressor, intercooler and condenser to increase refrigerating tonnage at the same temperature. One new evaporator has been added with same rating as the existing unit; minus 28 F at 0 psig, and minus 15 F room temperature. The new rotary booster discharges at 35 psig (minus 21 F) and handles the equivalent of 195 tons at 178 Bhp. The two 10 x 10's require 248 Bhp. Results: 2.18 Bhp/ton, as compared with 2.84 Bhp/ton in Fig. 1.

Gee whiz, it develops more tons per hp at most commonly used conditions.

Gee whiz, it is a simpler device and thus easier to maintain.

Gee whiz, its simplicity begets less parts replacement.

Gee whiz, *Fig* 5 tells a pretty conclusive story.

He:— How come you claim a rotary is smaller ton for ton?

Ignores Question for Pun

Me:— Fig 6 shows how it is possible to mount the driving motor *above* the rotary booster. No known reciprocating machine can be arranged in this manner and still permit pulling pistons and heads. Besides the driving motor of a rotary booster is frequently larger than the rotary itself.

Gee whiz, where machine room floor space is at a premium, how can this arrangement be topped?

(Boss, I didn't *mean* to make a pun and Mr. Reinert being a real courteous man, didn't even smile. He just looked like he hadn't heard like you did last Summer when I was right in the middle of reading you Chapter 4 of my thesis on why I need a raise. My sister said — but never mind, I'll tell you what she said on the long distance phone tomorrow — I mean I'll tomorrow tell you on the phone what she said — no — on the phone, what she said, I'll tell you! See? — tomorrow!)

Describes Sectional Views

He:—What is this — Fig. 7?

Me:—It is a sectional view of the rotary compressor at right angles to the shaft. The machine gets its name from the rotor which carries the blades. Note that it is mounted eccentrically. The suction gas at perhaps 5 inches vacuum enters through the suction screen or strainer. The blades operate in slots in the rotor. At rest, these blades drop to the bottom of the slots. When the rotor is brought up to minimum speed, the blades are centrifugally thrown against the cylinder wall. In some makes, the rotor blades strike a retainer ring which prevents them from rubbing against the cylinder wall. This arrangement eliminates wear but permits a small amount of "blow-by" which, of course, penalizes efficiency.

He:— Gee whiz!

Me:— "Gee whiz" is right! That's what it sounds like when running.

He:— What I started to say, was—

Me:— I bet you never noticed that the blades do not move out to the cylinder wall until the rotor has acquired some speed.

He:— Gee whiz, I certainly —

Me:— I *told* you it sounds that way. Now suppose you tell me what this means —

He:— It means you talk too much and too fast and that the machine starts unloaded!

Botts the Reserved Type

Right here, boss, I want to state that I remembered no salesman ever contradicts a customer — not that Mr. Reinert was right, because I must admit that I am the quiet reserved type who only speaks when he has a prolific statement to make. Anyway he apparently got the idea that the rotary booster does start unloaded and that there is no reason to use a high torque motor for starting. But to go on —

He:— The action of the blade in rubbing the cylinder wall wears them does it not?

Me:— "Not", it does! We have found that about 25,000 hours of operation results in 1/16-inch wear.

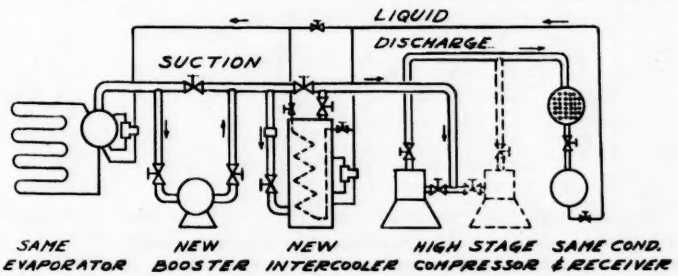


Fig. 3 — Application of a booster and intercooler to lower evaporator temperature with no increase in refrigerating capacity. One 10 x 10 in. machine is used as standby. Evaporator temperature is minus 40 F (9 in. vac.) with room at minus 15 F. Rotary added operates with 20 psig discharge (5 F), requiring 55 Bhp and delivering the equivalent of 60 tons. Bhp required by the 10 x 10 is 112 Bhp, delivering 72 tons. Avg. Bhp/ton is 2.84, unchanged from Fig. 1.

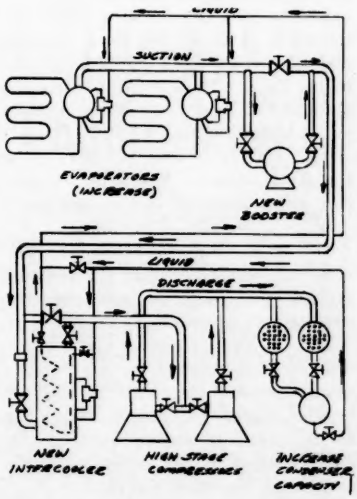


Fig. 4 — Additions of booster, intercooler, and condenser to permit both lower temperature operating range and more increased evaporative capacity. Differences in this plant and that pictured in Fig. 2 are: evaporative temperature, minus 40 F; room temperature, minus 25 F; rotary discharge, 20 psig, handling the equivalent of 125 tons at 111 Bhp; the two 10 x 10's require 230 Bhp. Bhp/ton then remains unchanged, although connected hp is increased by 125 hp (2.84 Bhp/ton).

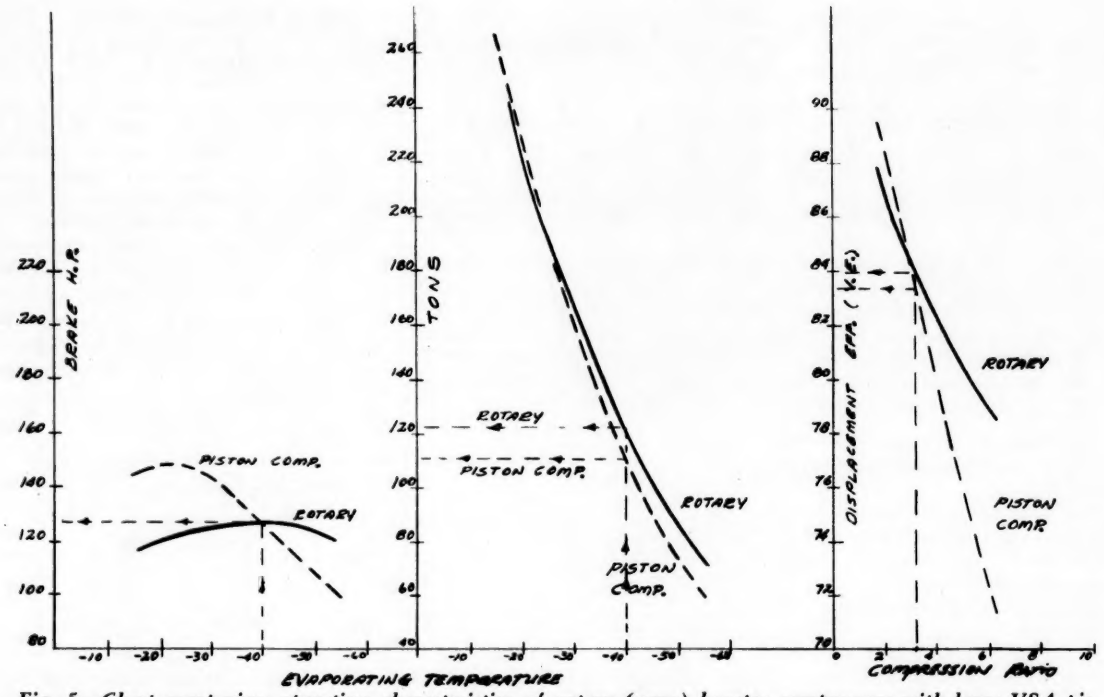


Fig. 5—Chart comparing operating characteristics of rotary (vane) booster compressors with large VSA piston type compressors.

He:— Who has an hour meter?

Me:— My many years of practical, theoretical and executive experience on the drafting board, in the sales field, in the field erecting and in service work have taught me that 25,000 hours of operation amount to about three years running — 24 hours per day.

He:— Holy Smoke! (Referring to Fig 8) I mean — Gee Whiz — only two roller bearings in this machine?

Me:— Yes sir — two only!

He:— How does the machine prevent air and moisture from being sucked in through the seal when operating at vacuum pressures?

Me:— Very simple. The seal is double as illustrated in Fig 8. The space between the seals is kept at booster discharge pressure by means of the small pressure line. This insures that if a seal does leak, the action will be out — not in.

Digs Trade Press Error

He: —Incidentally, I read an article the other day, calling attention to the action of moisture leaking *into an ammonia system!*

Me:— I read it too. Just proves that technical journals sometimes print mistakes — even that erudite periodical called *Industrial Refrigeration.*

He:— Oh well! I made a mistake once myself.

Me:— Not me! I take great pride in —

He:— I believe you! What are the blades made of?

Me:— Asbestos cloth impregnated with a phenol plastic which is non-corrosive with any known refrigerant. "Impregnated" means —

He:— I know what it means! I was born on a farm! I've heard that

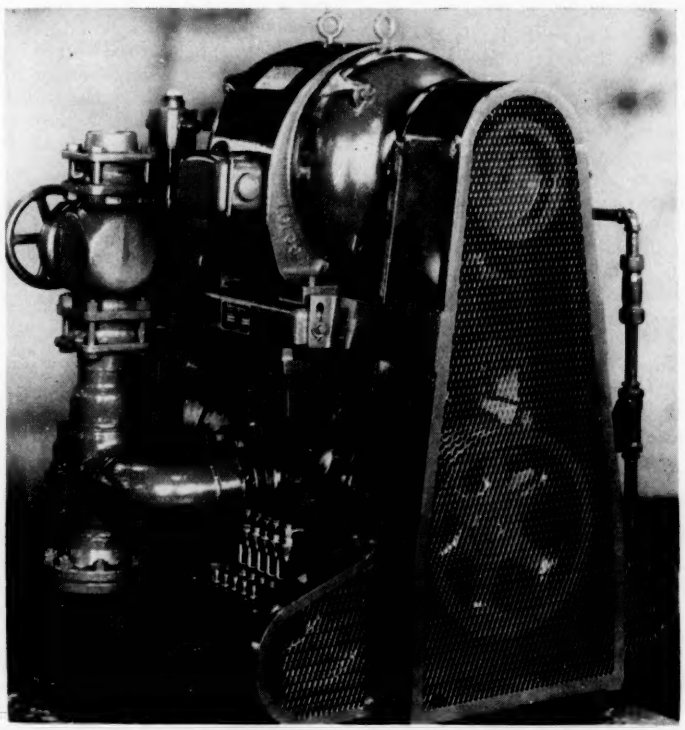


Fig. 6—Arrangement of driver motor over rotary compressor to conserve floor space. Note forced feed lubricator driven from rotary shaft.

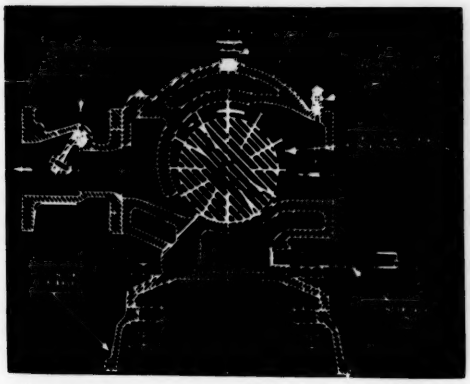


Fig. 7—Cross section of rotary compressor as viewed at right angles to the shaft. Rotor blades are pictured in their running position.

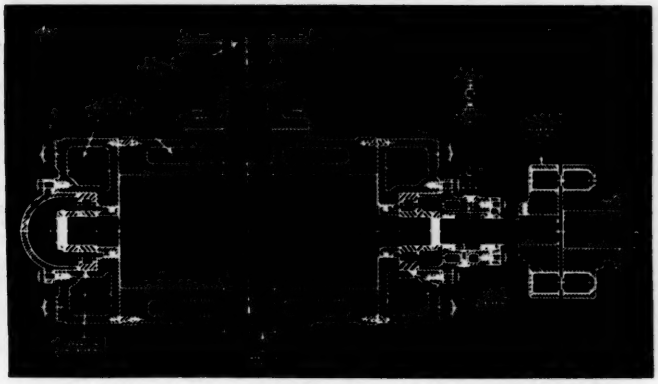


Fig. 8— Longtitudinal cross section of the Fuller—FES Rotary Compressor, showing bearing, seal and jacket arrangements.

your company sends out machines that are not machined out perfectly round. Is this true?

Me:— Yes sir! And it is no accident. We do it on purpose. If you will imagine that the cylinder wall is a clock for a moment; the surface from about 5:00 to 7:00 o'clock is rebored to the same diameter as the rotor. The rotor when mounted operates in the lower position so that the clearance from 5:00 to 7:00 o'clock is kept at a minimum — only about 3/1000 in the smaller machines. This greatly improves efficiency by practically eliminating "blow-back".

He:— If there is no crankcase reserve of oil, how does the machine get lubricated?

Me: —By a forced feed lubricator which delivers oil to each bearing and by means of a quill into the suction gas inlet. The seal chamber is lubricated separately as shown in Fig 8 and is provided with a site level glass.

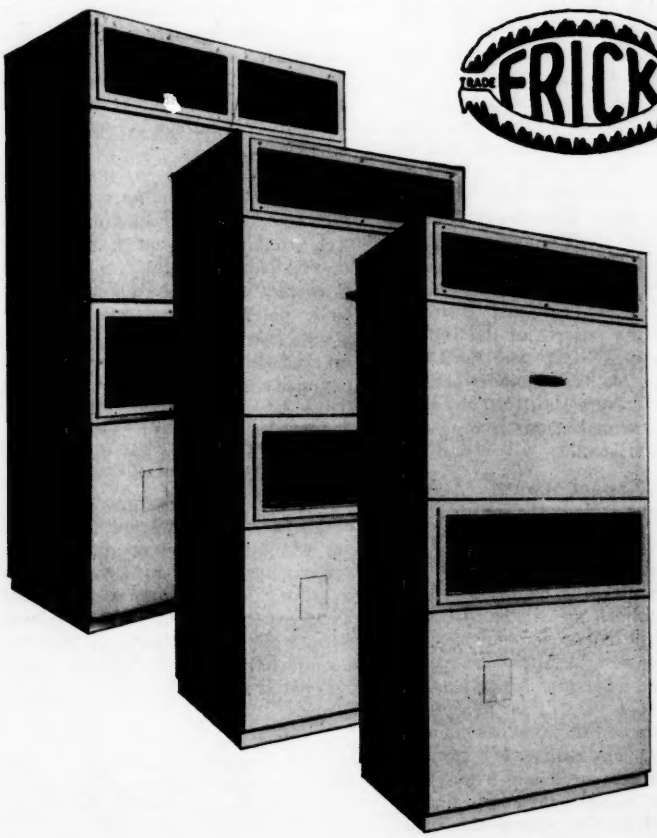
He:— What's this contraption?

Me:— Sir! Noah Webster defines contraption as a "contrivance" or "gadget". This, sir, is neither, sir! It is a capacity reduction device which by-passes part of the discharge gas back into the suction port. It may be operated either automatically or manually.

He:— How do you go about removing the blades?

Me:— One, remove end bearing housing; Two, pull each blade by grasping with thumb and forefinger

(Continued on page 52)



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From the President's Desk

Membership campaign broadens, Seattle report cited, A chief's experience is related

ON this page in January, it was pointed out that the chapters were in a position to steal the membership drive initiative from the National Committee. One of the officers of our newer chapters — this one hasn't even had its charter presented as yet — came right back with the suggestion that the association put on a drive per month, each month in a different industry.

NAPRE officers are thankful for the suggestion and would like very much to do that. However, under our present limited office staff that would not be possible in the same manner that our annual campaigns are arranged. Members will readily understand that it is quite a task to prepare a list of names or leads and to supply them to the 30 odd chapters throughout the United States.

However, the suggestion is well taken and it is recommended to the other chapters of NAPRE that for the month of March they might tackle the cold storage industry as a source of new members. That is, if they already have saturated their efforts in the dairy industry in their own locality. For those who do want to gain members in the cold storage phase of the refrigeration industry, here are a few thoughts: In our way of life, we give little thought as to just when or where any particular fruit or vegetable may be grown. We just go to our favorite market where a complete line of cold storage foods are maintained.

The NAPRE lecture course covers the temperature and humidity control required to keep the many food products in first class condition over long periods of storage. Managers of cold storage plants are invited to see that the men in the compressor rooms are given the opportunity to join our association so they will better know how to do their job in maintaining the best possible product.

McKenna Represents NAPRE in the Cold Storage Industry

In late January, The Refrigeration Research Foundation and the National Association of Refrigerated Warehouses carried on a joint training conference at Purdue University. Our Association was represented on the program by 1st Vice-president Bert C. McKenna, chief engineer for Central Cold Storage Company, Chicago. Bert's assigned topic was Engine Room Practices and Procedures. Since the conference consisted of warehousemen in junior executive, supervising or foreman responsibilities — all good prospects for management jobs some day, Bert had an opportunity to do an excellent industry relations job for NAPRE.

For those chapters who wish to take the earlier suggestion of conducting a drive in the industry during March, they might review the topics reported in this issue which were covered at the Purdue Conference in order to approach members of the industry in their own locality. NAPRE members are always interested in the problems of management and the various phases of our field. By studying topics of this conference we can become better acquainted with the requirements of the refrigeration engineer in the industry.

More Chapter Revivals Assigned

Since the February issue, it has been called to my attention that there is some desire on the part of members in Philadelphia to re-establish a chapter. Since we previously had a chapter there and at Louisville, Kentucky, these two chapters will be assigned to 1st Vice-president McKenna, along with the Twin Cities, Omaha, Council Bluffs, Portland and Indianapolis. During his trip to Purdue, 1st Vice-president McKenna took advantage of an opportunity to address the Indianapolis group on Wednesday, January 25. He was accompanied by the National Secretary, Dick Kelahan. They met with the newly elected officers of the Indianapolis group, who assured them that the chapter would submit its petition for a charter very shortly. They hope to be represented at our coming convention in Detroit.

Chapter Report Award To Grainger, Seattle

This month, this column takes advantage of an opportunity to honor Seattle chapter for its report. Actually, the report was made earlier in the year but had to be condensed because of space limitations for earlier publication. Therefore it was believed that they should still be considered in the competition for this month's report. For an informative account of how purgers work and where they should be located, look up Seattle report by John Grainger in this issue.

Bert C. McKenna

A very humorous account of certain happenings which took place when one of our convention delegates went to Los Angeles last Fall has recently come to our attention. This individual had never been a delegate before — as a matter of fact had never been to a convention before, and then these things had to take place. For obvious reasons the party will remain anonymous but we have his permission to quote his letter:

"He Should Have Stayed Home"

"It's been a grand round and round since I got back from the convention and I guess that will be the last fall convention I can go to. Plenty of trouble happened while I was gone, not only at the hospital but at the cold storage plant I serve as well. It's too touchy a business to leave in the busy season so I guess I for one will have to leave the NAPRE convention for the boys that can get away in the fall.

The cold snap set in and as a result the hospital heating system gave the boys trouble. The automatic controls wouldn't do what the book says they should do. The rancher who owns the cold storage plant forgot to close the engine room door, with the result two compressors froze and cracked their heads. On one unit the expansion coil went out. As a result there was no refrigeration from Wednesday until I got home Sunday. A quick freeze plant also had a compressor go out. I was supposed to check it for the insurance company and install the emergency compressor which I have at my home, a 75 ton compressor. I had it mounted on a trailer with motor switches etc. They got someone to get it and hook it up while I was gone and they are not too happy that I wasn't at home. So goes it for my first trip to a convention.

L. Etzel

NAPRE

Question Box

The National Educational Committee, NAPRE, answers monthly in this column, operating problems forwarded by members. The Committee appreciates answers from the field. Address questions and answers to Prof. Harold P. Hayes, Dean of Engineering, State Polytechnic College, San Luis Obispo, Calif.

Refrigerate Jacket Water

QUESTION NO. 1094: Please let me know if there is a reason why I should not put ammonia coils in the circulating water tank for the compressor for condensation during hot periods.—G.T.C., Hamilton, Ont.

ANSWER: I presume that the question concerns the refrigerating of the jacket water of an air compressor. In this case it would be alright to put ammonia evaporator coils in the circulating tank for the jacket water; however, the rate of heat transfer from the water to the coils would be quite low unless the water were well agitated. Coils submerged in still water will have a heat transfer rate of only about 20 Btu/(hr)(sq. ft.)(°F). With a double tube heat exchanger with a good rate of water flow the heat transfer rate may be more than 10 times this value.—N.S., San Luis Obispo.

Accessory Inquiries

QUESTION NO. 1095: Will you please tell me where I can purchase the following items: Rupture discs for ammonia gas which will rupture at 225 lbs. to 275 lbs?—W.F., Mercedes, Texas.

Sulfur sticks for ammonia leak detection?—C.W., Seattle.

ANSWER: W. F.: You can obtain ammonia rupture discs from the firm name supplied by IR reader service dept., forwarded herewith. However, we would suggest that you would consider for safety, the installation of a relief valve in lieu of rupture discs. The safety valve will function to relieve a pressure vessel or line under excessive load and then reseat. This conserves the refrigerant remaining in that portion of the system served by the safety device. Should the rupture disc go you will lose all the charge except that which remains at atmospheric pressure. Some firms have been known to lose some rather expensive charges with larger installations. You may care to consider this suggestion before replacing any discs that you may now have, or adding any new ones to your system.—J.R.K.

C.W.: Most all ammonia suppliers as a rule have sulphur sticks or phenol-phthalein paper available to their customers for the purpose of detecting leaks. If it is a real emergency, and your supplier cannot pro-

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vide the sulphur sticks or the paper within a reasonable time, I would suggest the use of a pipe cleaner or cord dipped in melted sulphur. The sulphur can be heated slowly until it is molten and a pipe cleaner dipped into the molten material. Another method which I understand is used by many engineers is to saturate a cord in molten sulphur and insert the cord into ⅜ inch pipe. Use the pipe as a sort of sheath and advance or retard the cord according to the amount of flame desired.

We might also caution that sulphur sticks should be used only where the area is well ventilated. Phenol-phthalein paper would be safer. However, the paper cannot be used in low temperature rooms as a rule. In such instances it is suggested that a very small amount of refrigerator compressor oil be brushed over a suspected leak. Bubbles will betray the leak. Quite often just fingering a suspected leak area with your bare hands and then smelling the finger tips will detect a leak that is slight or not too strong to detect otherwise.

Doubts Heat Capacity Claims How Cold is "Cold As Ice"

QUESTION NO. 1096: Recently the following two paragraphs appeared in a suburban newspaper under the heading: How Cold is "Cold as Ice". "First off, 32 F, the freezing point of water might come to your mind. But that's just the beginning of the "coldness" of ice. Modern GAS refrigerators provide ice cubes that are really cold—ZERO DEGREES! "Refrigeration experts point out that 'cold' ice is most desirable because of the two-way cooling action it provides in drinks. They explain it this way: first, zero degrees ice cools the liquid by attracting heat until the ice's temperature reaches 32 degrees. Thereafter the ice begins to melt, causing a second cooling action. Where 'warmer ice' is used, the only cooling action comes from the melting and the drink becomes flat and tasteless quickly."

Now this is a little confusing after reading the following statement on page 47 of the November issue of Industrial Refrigeration, an article by Eugen Wilbushewich on Rapid Ice Freezing:

"But the fact still remains that every type of fresh water ice, whether in block form or small-sized, has a temperature near 0 C (32 F) and contains the equivalent of 80 calories per pound calories (144 Btu per lb); therefore it cannot provide any lower temperature than its natural capacity."

How can Zero F ice be better, or am I confused about this "capacity"

ANSWER: The statements in the November issue of I R to which you refer are not as clear as they might be. The author was attempting to make the point that ice melts at 32 F regardless of whether it is in cube or block form. A drink which is being cooled by melting ice will not be cooled below 32 F. However, there is no doubt that ice can be cooled below 32 F. Data are available* on the specific heat of ice, for example, showing temperatures as low as minus 80 F.

Temperature	Specific Heat
32 to 20 F	0.496 Btu/pound
20 to 0 F	0.481 Btu/pound
0 to −40 F	0.452 Btu/pound
−40 to −80 F	0.414 Btu/pound

A one pound ice cube at 0 F would have the following heat capacity:

15.4 Btu in being warmed from 0 to 32 F
144 Btu in melting at 32 F

Applying this to the cooling of a drink, you can see that the cooling ability of ice at 0 F is roughly 10 percent better than one at 32 F—H. P. Hayes.

Use of Salt Dehumidifiers

QUESTION NO. 1097: I have heard of the use of flake calcium chloride in dehumidifiers for cooler rooms of cold storage warehouses. Can you give me any details on the construction and operation of these units?—W.H., St. Louis.

ANSWER: Industrial Refrigeration, October, 1955, p. 70 covered an interesting article on this subject. This article contains some good practical instructions for constructing such a dehumidifier. In constructing any such device, you should strive for a maximum amount of contact between the calcium chloride and the air. Within a closed drum such as that described in the above mentioned article, this is accomplished by spreading flake calcium chloride on a flat tray and blowing air across it by means of a fan.—H. P. Hayes.

Electro-Filter Self-Charged

QUESTION NO. 1098: I have always thought that electrostatic filters require high voltage D.C. current to activate them. Recently, however, I have heard of a self-charging electrostatic filter. Can you tell me how one of these would work?—N.M.D., Chicago.

ANSWER: Electrostatic filters as we usually picture them do require high voltage D.C. current. They operate on the principle that airborne particles when subjected to a high voltage field become charged and are precipitated when they contact an electrode of opposite polarity.

However, another type of electrostatic air filter operates on a self-charging principle. Certain plastics, resins, and waxes develop an electrostatic charge when subjected to an air stream. This charge is of sufficient magnitude to attract and retain particles of dust, smoke, soot, etc. Such filters have operated effectively, are washable in cold water, and can be reused after washing without deterioration of their electrostatic properties.—H. P. Hayes.

New Questions

Iron Deposits Clog System

QUESTION NO. 1099: Our well water leaves a heavy deposit of iron in our water pipes. What can we do to eliminate taking pipes apart to clean out the iron?—C.B., Mich.

Says Air Conditioning Plant Will Prevent Window Fogging

QUESTION NO. 1100: Our dry cleaner has his plant air-conditioned for summer comfort of his employees. A small branch duct serves his customer area. In the winter gas heater blower units serve the plant and customer areas. However, steam from plant operations condenses on the front and side windows, runs down the walls, and in general ruins the interior and exterior appearance of his building. I maintain that he can operate his air conditioning system all winter and reduce or eliminate the window fogging. His air conditioning man says the scheme is ridiculous. Care to arbitrate this argument,—Wm. R., River Forest, Ill.

The Perennial Question On Power Factor Correction

QUESTION NO. 1101: Can you explain in a few simple words what power factor correction is, why it should be done, and how it can be done?—Q.B.C., Los Angeles.

Food Irradiation Begins To Worry Practical Men

QUESTION NO. 1102: I have recently seen a few newspaper stories about irradiation of foods. These stories say that radiation treatment of foods may some day replace refrigeration. I'm not really worried about this, but I am curious about it. Does it really work? Is it really the coming thing or is it mostly newspaper talk? —W.O'R., Chicago.

Wants Review Of Reefer Oil Asks Handling Fundamentals

QUESTION NO. 1103: I have read so much lately about oil separation and the necessity of oil traps for certain refrigerants that I am starting to get confused. Can you go back to fundamentals and explain why the oil problem is so important to refrigeration and what happens if I don't handle it properly? I understand some refrigerants give more lubrication problems than others. Why should this be the case? How do I know when I should take special precautions? If there are some special things to watch for, I would sure like to know about them.—F.H., Los Angeles.

Old Ice With Cocktails

WHEN travelers on Scandinavian Airlines transpolar route between California and Copenhagen touch down at Stromfjord, Greenland, they can take ice one million years old with their cocktails. It is carved out of Greenland's ice-cap and conveyed to Etromfjord Hotel on caterpillar trucks.

*ASRE Data Book—Design Volume 1953-54, p. 36-15

News Notes and Chapter Activities

Los Angeles

FRED HERR

AN extremely interesting and discussion-provoking program for the February 1 meeting in the Terminal Club, was presented by Guy R. King, chairman of the educational committee of Los Angeles Chapter, NAPRE. It took the form of a panel discussion manned by four members of the chapter who were requested to detail an experience in their plants in which contaminants in refrigerants or refrigeration machinery was the problem, and how the difficulty was eliminated.

Panel members were King as moderator; R. L. Maple, assistant plant manager, Union Ice Co.; Michael Julius, chief operating engineer, California Consumers Corp.; and Lawrence Benedict, owner, The Benedict Co. In opening, King presented some comment on the danger of using improper grit in the shaping or cleaning of soft metal parts. He pointed out that a hard grit may disfigure a piece of soft metal beyond repair. He cited cases where particles of hard grit actually imbed themselves in metal.

Thereafter, actual experiences encountered in plant operation were related by Messrs. Maple, Julius and Lawrence, in which contaminants in coils, pipes, compressors and condensers, produced by improper oil, came in for major discussion. All three related case histories of improper oil filling the lines and coils with sludge and waxlike substances that, in some instances, nullified nearly half the efficiency of the refrigeration system.

Julius also told of an experience involving a water leak which necessitated the pumping out of 3000 gallons of water over a 24 hour period and which caused a loss of 80 to 90 drums of ammonia.

Maple told of an experience in which a system was practically clogged with sludge and greasy contaminants. He explained how efforts over a period of time failed to correct the difficulty, until it was finally traced to the type of oil being used. His firm switched to the use of another ice machine oil, with the result that the trouble ended.

Benedict continued on the subject of oil contaminants in refrigeration systems. His case history concerned a personal experience in which a coating of what appeared to be wax had accumulated in a compressor. The wax proved to be from the oil. His firm even considered putting in a dewaxer, but found it too expensive for their budget. They finally switched to another brand of oil and waxing troubles ended.

The preliminary class was conducted by Alex Shears. The subject was Chapter 25 in Guy King's book. President Clifford P. Scott presided over the business session at which one new member was inducted. It was reported that Gilbert L. Powers, Ralph E. Manns Co., had been returned to his home after several months confinement in a hospital in Lancaster, Calif., where he was treated for injuries sustained in an auto accident last fall. Gil was hospitalized for nearly three months but is now reported well on the way to complete recovery.

An invitation was read by Secretary Donald Byl in which Colton, Calif., NAPRE chapter invited Los Angeles members to attend its Ham-and-Beans dinner and Ladies Night program on the night of February 8. A number of members indicated they would attend.

A demonstration-lecture on induction motors by Past National President Regis Gubser, vice-president and chief engineer of the California Consumers Corp., was the educational feature of the January 18 meeting. Gubser, a graduate electrical engineer, presented a discussion on operation of induction motors and the part they played in the refrigeration industry. He demonstrated withe several different size motors.

Students in the preliminary class studied the General Electric psychrometric chart under the supervision of Instructor Guy King. Treasurer E. T. Quinn presented his annual financial report, which was approved as read. It revealed the chapter to be in fairly sound financial condition despite heavier-than-usual expenditures in 1955.

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Detroit

LEO GAGE

DETROIT Chapter held its Annual Christmas Dinner Party on December 20 at Carson's Chop House. The attendance was so large this year that extra space had to be provided. Election of officers for the ensuing year took place after dinner, and all present officers were reelected unanimously. Due to the fact that this is the National Convention Year in Detroit, it was the membership's desire to retain the officers since they were instrumental in preparing the preliminary details for the convention next Oct. 29-Nov. 2.

Roy T. Burns, Convention Chairman, announced that this was the "kickoff" for the convention and asked the support of all the members and friends to make it a success. We were honored by the presence of many old-timers, including George B. Bright, an Honorary Member, who made it a point to be present while on a flying trip from Miami, and Burt C. White, also an Honorary Member, who came in from Waterford, Mich., where amongst other things he now functions as Justice-of-the-Peace in his semi-retirement.

The Spirit of Christmas prevailed throughout the evening together with jubilant entertainment, any many old acquaintances were renewed. All the ladies were presented with a special gift, and more than a hundred door prizes were given out which included everything from outdoor thermometers, boxes of candies, electrical appliances, turkeys, portable iceboxes, and food baskets of holiday delicacies.

Our refrigeration classes which are held at another time of the month at Wilbur Wright High School, are coming along very successfully. On January 13, members Kitts and Rawsthorne were the instructors. An added feature was a sound film on expansion valves, courtesy of Alco Valve Company. President Charlie Heemstra and several other members are working up a model refrigeration system of a small unit, compressor, condenser, evaporative coil, all mounted on a display board. Several different types of expansion valves or controls of various nature will be hooked up in the system in order to demonstrate their uses to members of the class.

Lois Heemstra, daughter of President Chas. Heemstra, drew the ticket stubs from the box for door prizes which were passed out by Howard McDonough, left, and Norman Garant, right.

Old-timers renew their acquaintances. Bill Eberlein and Geo. Bright shake hands, while Burt White looks on.

Detroit Christmas Party held at Carson's Chop House.

Greater Kansas City

JOHN MULLER

PRESIDENT KENAGY called the first 1956 meeting to order in the Town House Hotel, January 17. The full names of all members present were checked for correctness to go on the Charter. A letter from the National Secretary was read, after which Dave Grumbling placed a motion before the chapter to establish the name of the Greater Kansas City Chapter. Motion was seconded by J. L. Edwards and passed unanimously.

February 21 was the date selected for the Charter presentation, and the national office so notified. There was some discussion regarding whether or not the ladies would be invited to the party, no one disapproved the idea so it was agreed that the wives would be invited.

President Kenagy turned the meeting over to the temporary instructor. By means of a rather underhanded scheme, the instructor passed out black spots to everyone present and by doing so appointed every member as an assistant instructor. After a brief introduction to the course on Basic Refrigeration, part of the first chapter was discussed.

Our December 20 meeting had as feature speaker, J. N. Woodsmall, manager, Industrial Sales, Western Division, Sinclair Oil Company. Woodsmall talked on oils and lubricants as they applied to refrigerating equipment. Remarks from several of the members indicated that this was one of the finest discussions on lubrications that they had heard. After considerable discussion on oils and lubrication, President Kenagy adjourned the meeting and refreshments in the form of eggnog furnished by the Country Charm Dairy was enjoyed by all.

After due consideration and discussion at our December 6 meeting, the following officers were elected to serve for the year of 1956: President, Lee Kenagy, chief engineer, Argentine Plant Railways Ice & Service Co. Inc.; Vice-president, V. W. Crocker, chief engineer, Federal Cold Storage; Treasurer, Dave Grumbling, chief engineer, DeCoursey Creamery Co.; Secretary, John G. Muller, district engineer, Railways Ice & Service Co. Inc.

Sacramento

D. W. BARTON

THIS chapter's January meeting was devoted principally to the election of officers for 1956. Your correspondent is happy to report that he was finally relieved of the job of secretary-treasurer after ten years of service. The new officers are President, William R. Nichols, Sacramento; Vice-president, R. W. Talley, Roseville; Secretary-Treasurer, Phillip Bunnell, Courtland.

Denver

M. FLORIDA

CLASSWORK at our late December meeting was based on the second chapter in Basic Refrigeration. The class was conducted by Dean Dungan, 2nd vice-president. We haven't as yet picked a permanent instructor and are taking turns trying to find the best suited person for the job. Flow diagrams furnished through courtesy of the Creamery Package Mfg. Co., were distributed.

Hank Thurstin, Marley Cooling Tower representative, was good enough to show two films. The first was on cooling tower construction, that he had taken himself, while his company was in the process of building various installations in and around Denver. The talk that was delivered at the time of showing was very good and the membership was well impressed.

The second film was supplied to Hank by the California Redwood Association entitled "Sempervirons". This happens to be the biological name for the redwood tree. This movie answers a lot of questions as to why redwood is used extensively in cooling tower work. The movie takes viewers right into the forest where the trees are "harvested" and from there into the mill showing the operations from the rough log to the finished product.

We signed up one new member at this meeting. We are on our way to giving all chapters a little bit of a run for their money on new members this year. As of

yet we haven't heard any answers on the challenge we issued to one and all. However, we can imagine what the reaction will be from some of them. We gave an explanation of our prize gavel, and passed it around to the members for inspection and the comment was all to the good. We are extremely proud, considering the late start that we got, that we were able to earn this very nice prize.

New Orleans

MAX SOFER

LOUISIANA Chapter No. 2 had a wonderful party at L'Enfant's restaurant to inaugurate the new president Damian Fischer and all of his officers. The ceremonies were performed by John Mariakis, a National Director. He was assisted in his duties by Hollis Havers. After Milton Mancuso, outgoing president, reviewed the chapter's 1955 accomplishments. He was presented with a gorgeous gold and glass mantle-piece clock by B. J. Mancuso of the "Pelican Institute of Technology."

President Fischer then addressed the audience and briefly outlined his program for the coming year. Then followed a presentation which was made by our esteemed secretary Leo J. Vivien to one of our valuable members and former presidents of the chapter, none other than Frank X. Gillio. The token of the club's membership was an award for the best "extemperaneous" speaker of 1955. Naturally this was all in fun and everybody enjoyed a good laugh, especially the recipient of the medal.

Officers of Louisiana Chapter No. 2: front row, left to right: Joseph Arena, Max Sofer, Damien Fischer, John Luck, Leo Vivien; second row, Hollis Havers, Eugene Orth, George Whitman, Joseph Vernaci, Harold McGovern, B. J. Mancuso, Frank Guillo, Fred Thomas; third row: John Mariakis, Milton Mancuso, Marion Olivier.

Al Ballanco and his orchestra provided excellent entertainment for the celebration with his dance music. Without exception everybody enjoyed a wonderful time. Our local newspapers had sent reporters and photographers to cover the installation banquet. Special thanks were given to Jerry Vieagas who had made all the arrangements for that night. For outstanding services to the organization honorable mention was made of general-manager of the Reily-Benton Co., Al Lusch and Allen Johnson, editor of the Industrial Weekly, who have supported and publicized our Chapter and the work done by NAPRE.

On January 25 our second meeting of the year was started off by educational chairman, Marion Olivier, who introduced Professor T. A. Stokes. The topic of his lecture was the various methods employed for defrosting evaporator coils. Anyone who thought that this was a dull subject was mistaken because our audience really had many questions to ask and suggestions to make. For "lagniappe" (something extra, given without additional charge) our lecturer described a problem of condensation on an outside wall, constructed of marble and glass, and showed us how to solve this with a minimum of insulation and labor.

The greatest part of our business session was taken up by the appointment of chairmen and their respective committees. Membership and all its subcommittees will be directed by E. J. Dumaine; pub-

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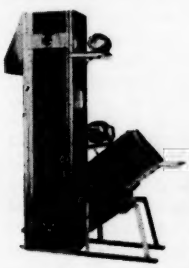

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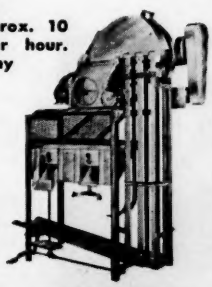

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licity by John Mariakis; publications by Fred Thomas, Jr.; entertainment by Jerry Vieagas; Finance by B. J. Mancuso, and building by L. Howat. The well-attended meeting adjourned to the Roosevelt Hotel Coffee Shop for the usual refreshments.

Indianapolis

JIM LUDEWIG

FIRST meeting in 1956 was held on January 25 at the Construction League Club. It was a dinner meeting, at which paying guests were 1st vice-president of NAPRE, Bert C. McKenna, and National Secretary, J. R. Kelahan. Indianapolis members felt privileged that Mr. McKenna, a featured speaker at the TRRF-NARW conference at Purdue, would take time off from that affair to visit with us. To complicate matters our locality underwent a heavy snow storm the morning prior to the meeting and we were a little doubtful as to McKenna's ability to make it.

At this meeting a number of members turned up who had not previously signed the petition for charter. The charter committee promptly went to work and the results are as pictured here.

McKenna addressed the group very briefly pointing out to them the fact that the chapter idea was inspired by the late Professor H. G. Venemann of Purdue, who had worked with the local gentlemen here on many of their problems. He indicated that several other chapters in the United States had inquired into the possibility of using the late Professor's name in connection with their chapter title. Indianapolis wishes to state that we have prior claim to the title of "The Venemann Chapter", and we intend to compete very strongly for it.

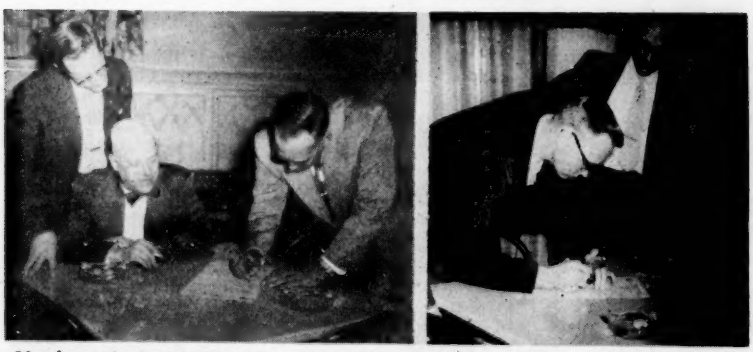
Following McKenna's remarks, the National Secretary was heard from. He reported on the convention at Los Angeles, stating the accomplishments of the association in number of chapters, members, the new industry membership and other items of interest to the local chapter members. Following an early departure of the two national officers, who were accompanied by James L. McIlraith and Charles Taylor of U. S. Cold Storage Company in Chicago, our group got back down to business, planning the 1956 program.

Colton

HARRY BONTER

CALIFORNIA Chapter No. 5 held its January 11 meeting at the Sante Fe Ice plant lunchroom in San Bernardino. The meeting was opened by 1st Vice-President J. E. Machut, in the absence of President A. W. Franklin who came in later after attending a meeting of the Gold Buckle Orange Assn. After the roll call of 14 members and one visitor, the main subject of the evening was preparations for a dinner at the next meeting February 8, called Ladies Night, for members, friends and wives. The committee settled on a ham dinner with all the trimmings which will be donated by the members and a charge of $1.50 per plate made. Receipts of the evening will go to build up the chapter treasury. Frank J. Scherer, Educational Instructor, took up the subject in the class lecture on building insulation, referring to Guy R. King's talk on the subject at the convention. The meeting closed with the usual drawing and lunch.

Speakers' table at the Indianapolis chapter meeting in January. Standing in the background are Donald Snare, Dick Kelahan, Anthony Wochna, Indianapolis President, Bert McKenna and Jim Ludewig.



Members signing petition for charter. Larry Barton watches over Secretary Jim Ludewig's shoulder as Donald Snare signs the petition. Don Faulk, Hayes Bros., signs petition while Barton of the charter committee watches.

Seattle

JOHN GRAINGER

SINCE our material submitted for earlier issue of IR was cut, we'll come back to our December report. Bob Carlsen, Arthur Forsyth & Co., gave the members a demonstration and lecture on purging. After covering practical pointers on where to purge NH_3 systems he turned his attention to describing operation of the Armstrong purger. The purger itself is simple in design consisting of a cylindrical chamber in which are a ball float, a cooling coil, and an inverted bucket float. Air is purged from the top of the chamber and the gas and air to be purged is led at high pressure into the bottom of the chamber via a check valve. Liquid ammonia is fed by means of an expansion valve and a differential valve to the cooling coil from where it is then led to the suction on low side of the system. This liquid ammonia line is also attached to the chamber at a level near the bottom, through a valve controlled by the inverted bucket float.

In operation the gas and air enter at the bottom through a check valve in the chamber. This gas and air is fed to the underside of the inverted bucket float displacing the liquid which causes the float to rise and close the valve on the liquid line. The gas and air then pass up through the liquid ammonia in the chamber by means of a vent in the inverted bucket until it comes in contact with the cooling coils, where the gas is liquefied and the air liberated. The air accumulates at the top of the chamber gradually increasing the pressure and so forcing the liquid level down. The ball float follows the liquid level drop and in doing so opens the air purger valve enabling the air to escape to the atmosphere. Liquid ammonia is forced into the inverted bucket which causes it to depress, opening the valve and so connecting the chamber with the low or suction side of the system. This completes one full cycle of the operation. Gas and air then enter at the bottom and this starts the next cycle.

The differential valve in the liquid line keeps this pressure always at 2 to 6 pounds pressure below the high side pressure. In effect, Carlsen pointed out, purging is done by chilling. He stressed several important reasons as to why automatic purging can be considered a necessity in any plant: 1) For every 4 lbs. pressure rise in the head pressure there is 2 percent loss in refrigerating capacity with a corresponding 2 percent rise in power costs:

(Continued on page 42)

Review of Progress — TRRF Sums Up Accomplishments During 1955

LOOKING quickly at 1955, the year's accomplishments are listed in a recent issue of the Information Bulletin of the Refrigeration Research Foundation in the following review:

1. As usual, TRRF aided research — 20 projects — chiefly tough and basic studies that are providing the technical knowledge now for the advancement of refrigeration tomorrow and in the unending future.

2. To mention specific gains — projects aided have (a) improved high-temperature-scalded poultry, (b) produced authentic data on freezing of candies and bread. (c) demonstrated advantage for refrigerated storage of dates, citrus, nuts, candy, onions, (d) made progress against condensation on refrigerated packages, (e) stimulated new interest in research on frozen milk, (f) aided continuing researches on heat transfer, enthalpy of frozen foods, temperature tolerance of frozen foods, Staphylococcus food poisoning, instrumentation for measurement of rh at freezing temperature, frost heaving of soil under ground-floor freezers, analysis and control of refrigerated storage atmosphere and (g) initiated projects on freezing oysters and lake fish, nursery-stock storage, refrigeration-pipe coils, control of water used in refrigeration, bitterness in carrots.

3. Through constant counselling with technical groups in such industries as fisheries, poultry, meats, fruits, vegetables, nursery stocks, refrigeration equipment, transportation — and through similar counselling with research agencies such as USDA, State Expt. Stations, University and industrial laboratories, International Institute of Refrigeration — TRRF has kept the refrigerated warehousing industry's technical problems in the broad stream of refrigeration research and research planning. TRRF aids certain projects — counsels on many.

4. General service work has included (a) a large and successful training conference conducted in cooperation with NARW, (b) a review of refrigeration research needs by the Foundation's Scientific Advisory Council in conference with project leaders, (c) further additions to the *Commodity Storage Manual*, (d) collaboration with American Society of Refrigerating Engineers in Publication of *Refrigeration Abstracts*, (e) initiation of the Samuel Cates Prescott Fellowship which will aid a graduate student in research on refrigeration.

5. A special task of 1955 has been an effort to counteract misleading and potentially harmful speculation on the ultimate effects of the great volume of research under way on sterilization of foods by radiation. The effort has proved very effective as judged by the very wide and favorable public response.

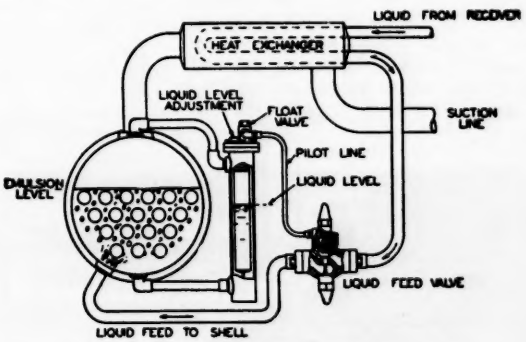
6. Other special tasks have included promotion of interest in packaging and containers that stand up in refrigeration storage, service of the Director on the Cold Storage Research Advisory Committee of USDA, service also on a number of industrial technical committees and service on the National Research Council's Food Advisory Committee.

Poultry Export Slated

THE AGRICULTURE Department has announced that the United States has agreed to sell $1,200,000 worth of frozen chickens and turkeys to West Germany for German currency. The frozen poultry will be sold by private United States traders to German importers. The Department said the bulk of the German funds from the sale would be used for development of markets for United States agricultural commodities in Germany.

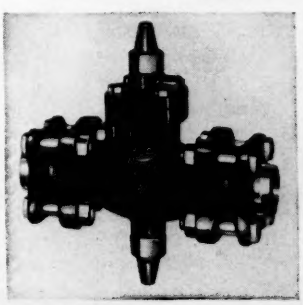
MODULATING-TYPE PHILLIPS VALVES INCREASE REFRIGERATION EFFICIENCY

A line of refrigerant valves that permit higher heat transfer rates and more stable operation of refrigeration systems has been developed by H. A. Phillips & Co., Chicago. The valves are the modulating type which automatically and continuously adjust the refrigerant flow to the refrigeration load. According to Phillips engineers, modulated refrigerant feed keeps evaporator tubes constantly wetted, insuring maximum heat transfer at all times. "Hunting" of system pressures and temperatures, a common occurrence with "off-on" refrigerant control, is also eliminated. Loading on compressors is more even, reducing maintenance problems. Phillips modulating controls include float valves for high and low side installation and both thermostatic and float pilot operated feed valves. They are applicable to a wide range of refrigeration systems.



LOW SIDE CONTROL

A typical low side method of Freon level control using Phillips Valves. Arrangement balances weight of liquid in float chamber with liquid and gas in evaporator. Float Valve at left controls high capacity Pilot Operated Feed Valve.



Phillips Float Valve for use with Pilot Operated Feed Valve. "Level Eye" on float chamber shows liquid level, simplies adjustments. An adjusting stem allows changing control level as much as 2 inches.

Phillips Refrigerant Feed Valves for both low and high side use are available from ½ to 3-in. pipe size for all refrigerants.

Write for full details and typical hook-up drawings.

PHILLIPS

H. A. PHILLIPS & CO.

DESIGNERS AND ENGINEERS
REFRIGERATION CONTROL SYSTEMS

3255 W. Carroll Ave. • Chicago 24, Illinois

(Continued from page 40)

2) Increase in cooling water; 3) Higher head pressures with corresponding higher discharge temperatures can cause breakdown in lubricating oils, and damage to suction and discharge valve.

Carlsen pointed out that the difficult thing in installing a purger was to find the most efficient point to purge from. This should be at the coldest point in a place where gas and air can be expected to accumulate. It is the usual practice to make a connection from the top of the condenser and also one from the top of the receiver. By alternately purging from these two points it can be determined where the most air has accumulated as very often the point of concentration will vary and does not remain constant. It has been estimated that it takes roughly from 50 to 100 cubic feet of gas to purge one cubic foot of air by manual purging, but with automatic purging the loss of gas from the system is almost negligible.

Members-at-Large

FRANK CHASE

IT HAS been most encouraging to hear from some of our members-at-large with whom I have been corresponding. Michael Pinn, of S. Pinn & Son, 120 Liberty Street, New York, N. Y., writes that he has contacted Robert Naylor, representative of Owens-Corning Fiberglas Corp., New York, N. Y., who is also a member-at-large, and broached the idea of forming a chapter in the metropolitan New York area and he seemed very receptive to the plan. They expect to get together in the near future to plan further progress. Upstate in December and January we had correspondence from Dan O'Neill, supervisory engineer of Narragansett Brewing Company, Cranston, Rhode Island, and Gustav L. Beinert, formerly assistant chief engineer with Mutual Ice of Arlington, Va., and now at Ossining, N. Y. and Howard S. Bennett, associate member in Cortland, N. Y.

Another encouraging letter was received from H. Thomas Dewhirst of House of David Cold Storage, Benton Harbor, Michigan, who wrote "I am giving this matter (forming a chapter) my deepest consideration and have contacted several interested parties. If I am able to create enough interest, I shall contact you for further guidance and assistance." Also heard from Benjamin Deliso of Pioneer Valley Refrigerated Warehouse, Inc., Springfield, Mass., and Ott J. Nussbaum of Kramer Trenton Co., Trenton, N. J.

Thanks to Robert J. Heartwell of Sarnia Ice Co., Ltd., Sarnia, Ontario, Canada, who is a member of our national membership committee, and is assisting me with our Canadian brothers of which there are quite a number. A very nice letter was received from Lester J. Winkler, Oshkosh, Wisconsin, who was one of the "Bureaucrats" on our refrigeration panel at the Los Angeles convention this past November.

Members have probably noted how President Etzel has been encouraging our members-at-large to start chapters in their areas. One such suggestion has been an Idaho chapter. The requirements are quite simple and it is hopeful that Thomas D. Spencer, chief engineer, Idaho Creameries, Boise, T. T. Lockman, Kinds Packing Co., and Dale Logan of Terminal Ice & Cold Storage, both at Nampa, will be able to take our president up on his suggestions. Not too far away in Hooper, Utah, Warren B. Fox may be able to start up a little chapter there also.

Joining others in the Portland area who are eligible for formation of a chapter are N. J. Fehlen, Stayton Canning Company, and Russell R. Ewen of Portland. A new member brought in by our Educational Chairman, Dean Hayes, last year is James M. McGrath. Old timers in California tell me that at one time we had a chapter in Paso Robles. It could be that our San Luis Obispo members and C. B. Ferguson at Guadalupe could be instrumental in reviving a chapter in that valley.

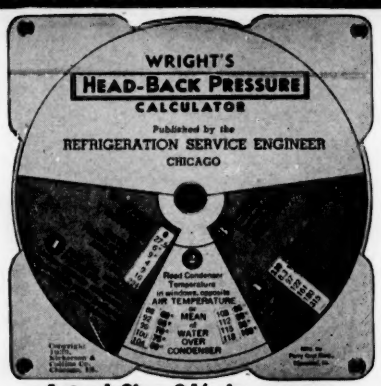
Members heard from Arizona way in recent months are Alvin G. Hubbard, W. S. Mason and S. L. Cordis, all of Tucson. Three members-at-large in the same city — that certainly ought to be an excellent chapter opportunity. Another member-at-large somewhat isolated from other brothers is Robert B. Rich, Columbus, Georgia.

Back up around Philadelphia where we have excellent chapter prospects for '56, we have recently heard from R. G. Hassel, Henry Bower Chemical Manufacturing Company, and Wm. Brownlaw of Quaker

• Shipped ready to work for you.

REFRIGERATION ENGINEERING COMPANY
MONTGOMERY • MINNESOTA

A Handy Tool - WRIGHT'S HEAD-BACK PRESSURE CALCULATOR



Actual Size 3½ in. square

The Head-Back Pressure Calculator quickly determines the proper head pressure, for various refrigerants when the suction pressure, room temperature or mean water temperature is known.

Such variable conditions as the suction pressure, room temperature, water inlet and outlet temperature, kind of gas used, etc., all enter in determining the proper head pressure.

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City Cold Storage Co. A. L. Rineer of Lancaster Ice Manufacturing Co., also corresponded.

Over in Ohio we heard from a goodly number of members-at-large very early in the year. They are Dick R. Falbo, Canton Ice & Cold Storage Co., Wm. L. Morris, and Robert C. Hogan of Canton Provision Company. Three more members in one town should indicate fair prospects for a chapter. W. J. Mikker of Columbus, Ohio, sends us an annual Happy New Year card when he remits. Over in Sandusky Robert L. Missig of City Products Corp., was heard from, also L. O. Warner, who heads up his own firm of the same name in Dayton and our good associate member Wm. R. Robinson of Ohio Galvanizing & Manufacturing Co.

Yakima

ELMER TOOP

AT OUR meeting of December 28, the principal business was election of officers: President, Elmer Toop (At Last); Vice-president, Arthur Krum; Secretary, Gallen Sutton; Sgt.-at-Arms, E. A. Wahlstrom. Arthur Krum has been appointed Educational Chairman.

George Picatti, from Picatti Electric Company of Yakima, talked and demonstrated on electric controls, relays, etc. for our field. After our business meeting we went to Yakima Valley Memorial Hospital to look at their air conditioning, boiler and power house. Harry Dodsworth is chief engineer there.

We regret to report that Oliver N. Little died on January 6. Little joined our chapter April 23, 1947. He was employed in different cold storage plants, worked for Elmer Toop at Holtzinger several summers as relief man while men took vacation. He was also employed at Gleed for Lamb Fruit Co., quite a few years, but retired last season to run his small pear orchards.

Tacoma

PHIL GILMORE

AT OUR January meeting we had election of officers with the following elected: Archie Waterbury, president; Phil Gilmore, secretary-treasurer; Glen Gray, vice-president; Lewis Johnson, sgt.-at-arms and Wayne Vanderflute, educational chairman.

We set up a policy with the Emerson Brandt Memorial Trophy whereby it is to hang in the engine room or office of the various companies our members work for. Each company is to have it one month at a time.

At our February meeting Archie Waterbury appointed Jim Bennett, assistant educational chairman, Vernon Kritchmer, membership chairman, and Art McNikel, social chairman. A committee was appointed to draw up some new by-laws for the chapter to operate under, as some of the ways we did things in the past when the chapter was small became more involved and difficult now that the membership has grown.

Our February meeting was very successful. We had the largest turn-out in a year. Mr. Walsh, Jr., of the Pacific Scientific Co., was our speaker and he gave a very educational talk on automatic refrigeration controls. He also showed a 30-minute film made by the Alco Valve Co., which graphically and interestingly showed the structure and workings of thermo valves, solenoids and back pressure regulators.

Wayne Vanderflute conducted the Guy King course on the chapter in lubrication, and we had quite a discussion on the pros and cons of reclaiming refrigeration oil. Everyone enjoyed the coffee and doughnuts afterward, and our new president won our award for the evening.

Memphis

CHAS. CONLEY

ON WEDNESDAY, January 4, Alivs J. Clay acted as installation officer and installed the chapter's new officers. President J. H. Robinson treated the group to refreshments. H. L. Todd, our instructor, talked on Chapter 4 of Basic Refrigeration on the subject of expansion valves. Todd had several makes and types of expansion valves cutaway so they could be seen throughout. He had a small compressor running with an evaporator coil working with an automatic expansion valve on it. He showed how the frost line could be controlled by moving the bulb out on the coil or back further on

(Continued on page 50)

New Merchants Terminal Corp. refrigerated warehouses, Baltimore and Landover, Md., using Enamelite to bond and seal wall and ceiling insulation.

4,300,000 Board Feet of Corkboard Insulation

Bonded and Sealed with Cold Applied *ENAMELITE No. 330*

Insulation properly erected and sealed against moisture-vapor infiltration and freezing-thawing action will maintain its efficiency and last indefinitely.

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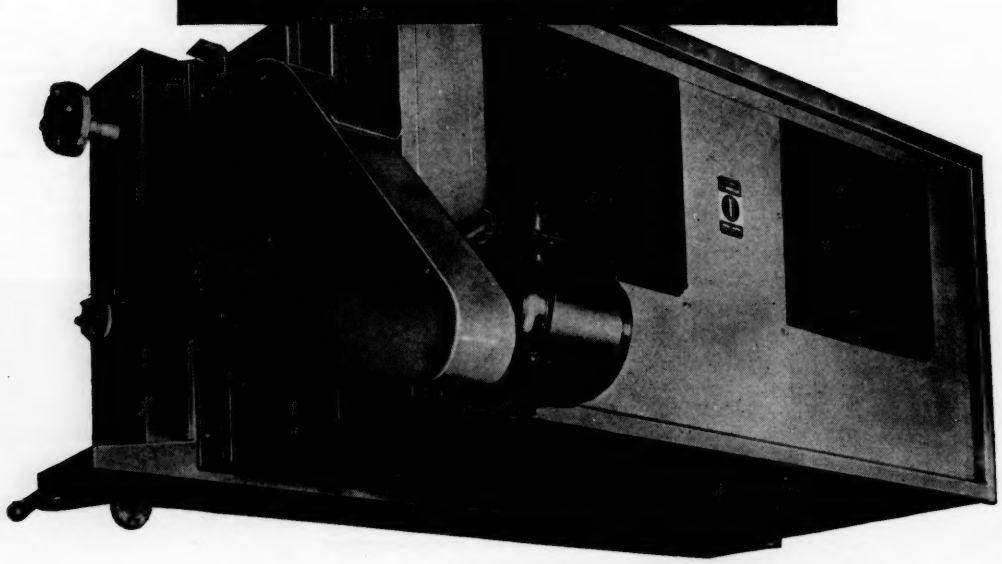

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Ceiling mounted, THERMOBANK takes no precious floor space. You can store products directly under the unit.

Can be used as an independent system or with an existing large system without affecting the operation of other evaporators.

WRITE FOR BULLETIN 294-6

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Canadian Association Issue "Stops for Ice" Directory

THE production and distribution of the 1956 edition of the "Stop for Ice" directory of cash and carry ice stations and automatic ice vendors has been arranged for the Canadian Association of Ice Industries by a special committee appointed for that purpose. Approximately 600,000 of these directories were distributed in 1954 and 1955 through more than 600 outlets across Canada, including motels, tourist information bureaus, oil companies, automobile clubs, travel offices, sports goods stores, in new portable ice chests, portable ice coolers and ice companies.

The directory, in the form of a six-page folder, lists ice companies by provinces and cities.

Florida Ice Plant Sold

THE old Williams-Beers ice plant, St. Petersburg, Florida, has been sold to Acme Jalousie Co. Horace Williams, Jr., representing the estate of Ida Weller Williams, confirmed sale of the property. The ice plant at 16th Street and Tangerine Avenue, South, was built in 1926, but has been inoperative for some years.

Precooked Frozen Foods

A SYMPOSIUM has been issued on a discussion of the various aspects of precooked frozen foods held at the Palmer House, Chicago, May 20, 1954, under the auspices of The Research and Development Command of the Quartermaster Food and Container Institute for the Armed Forces. Its purpose was to learn the present status of knowledge on this subject and to point out the problems remaining to be solved, and to improve the quality of precooked frozen foods served to the servicemen.

Among the problems cited in serving pre-cooked frozen foods in railroad dining cars and restaurants is the inadequacy of present refrigerating equipment, and the time needed for thawing and heating the food before serving.

North Carolina Regional Conference

ANOTHER of the 1956 regional conferences has been scheduled by the National Association of Ice Industries. It will be held at the Sir Walter Hotel, Raleigh, N. C. Tuesday, March 13. The meeting is being held in conjunction with the North Carolina ice convention.

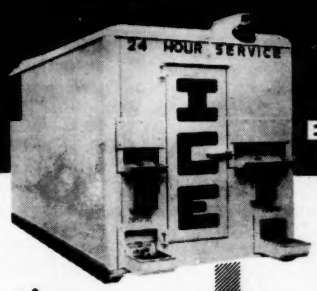
Frozen Pork Purchases

RECORD pork purchases of 12,963,600 pounds early in February under the continuing program to assist hog producers included the first awards on frozen products which were recently added to the program. Purchases were for 840,000 pounds of frozen hams at prices ranging from .45 to .4727 cents per pound; and 300,000 pounds of frozen shoulders at prices ranging from .31 to .34 cents per pound. None of the offers to sell USDA frozen pork loins were accepted. The USDA will continue to accept offers for frozen pork products on a weekly basis. Awards announced in this purchase were made to three of four bidders who offered 35,000 pounds of frozen pork shoulders, and four of 14 bidders who offered 2,160,000 pounds of frozen hams.

Ice Plant Damaged by Fire

A FIRE, started by a flooded oil heater, took a $2,200 damage toll at Consumers Ice & Coal Company, Jacksonville, Florida. Firemen reported the blaze started in an upstairs office of the $100,000 structure and caused $1500 damage to the building and $700 to contents.

S & S



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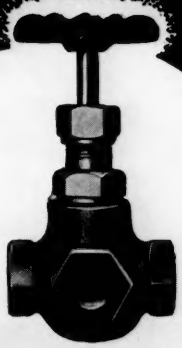

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Built of highest grade materials with close tolerances —will stand most rigid inspections.

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Advisory Group Cites Need For Expanded Research on Food Storage

STUDIES to improve tenderness of frozen poultry, aid processing and storage of precooked frozen foods, provide better packaging for frozen vegetables, fruit, bakery, and poultry products, and develop new equipment and methods for large-scale freezing of bread and other bakery items were among top-priority research needs cited by U. S. Department of Agriculture's Cold Storage Research Advisory Committee at its annual meeting.

The committee also urged United States membership in the International Congress on Refrigeration. As a non-member of the Congress the U. S. has not had a vote in its proceedings.

The Cold Storage Research Advisory Committee considered research proposals in eight categories, and gave high priorities to a number in each grouping. Among the research needs cited as urgent were:

Product Quality and Nutritive Value: Expand studies on tenderness in commercially processed frozen turkeys and chickens to determine the most economical processing and aging methods for optimum tenderness in the cooked product, with special emphasis on protein values. Initiate studies on changes—such as bitterness or non-uniformity in color—occurring during storage of carrots.

Environment Requirements: Expand studies on time-temperature tolerance and stability of frozen vegetable, fruit, and poultry products, including precooked frozen foods, in order to provide a sound basis for process development. Expand research on the refrigerated storage of nursery stock and floricultural products.

Container and Package Development: Expand research on packaging for fruit, vegetable, poultry, and bakery products to protect them through processing and freezing until ultimate use by the consumer. Initiate research on the performance at low temperatures of corrugated and fiber board containers, including closures, with emphasis on adhesives.

Shrinkage or Spoilage Factors: Expand research on the effects of bacteria on meat processing. Expand research on modifications in processing methods, equipment, or chemical inhibitors to reduce or prevent deterioration and lowering of quality due to microbial contamination and build-up in frozen foods during processing.

Equipment and Facilities: Expand research to develop optimum procedures for large-scale commercial freezing of baked and partially baked bakery products, with initial emphasis on various types of bread. Expand investigations on improved methods, equipment, and facilities for precooling fruits. This should include biological, engineering and economic research on warehouse cooling, vacuum cooling, hydrocooling, tunnel cooling, and other methods.

New and Improved Frozen Food Products: Expand work to develop more economical, more convenient, and new frozen poultry products of high quality. Expand research on methods for the preparation of concentrates and super concentrates of Florida citrus juices, especially orange and lemon juices.

Economic Studies: Expand research on processing of inedible by-products from locker and small slaughter plants to find the most economical and sanitary method of disposal. Study the possibilities of expanded institutional use of frozen fabricated cuts of meat.

Educational and Other Services: Evaluate the cold-storage statistics program to improve and extend the monthly reports in a manner satisfactory both to those who make and those who use these reports. Expand the

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SPECIFY VAPO-WALL AND BE SURE
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resistant to mold, rot and vermin ... has no food value
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Don't gamble on a "toss-up" ... there is a difference in insulation. And Vapo-Wall low-temperature pipe covering makes that difference by eliminating the need for extra vapor barriers ... by assuring permanent insulating efficiency even under the most adverse conditions. Vapo-Wall is self-sufficient ... offers top thermal ('K' factor — .25) and moisture resistance thanks to its unique sealed-cell structure. Pipe, vessel and fitting covers available in 8 standard thicknesses. Write today for complete information.
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educational work of the Cooperative Extension Service in providing processors, distributors, and consumers with useful information based on the latest research findings in both commercial and home freezing.

The Cold Storage Research Advisory Committee, established under the Research and Marketing Act of 1946, will submit its formal recommendations on proposals discussed at this year's meeting to the Department during the next few weeks. Paul B. Christensen of the North East Cold Storage Corporation, Portland, Me., was re-elected chairman of the committee for the next two years. H. C. Diehl, director, The Refrigeration Research Foundation, Colorado Springs, Colo., was re-elected vice-chairman.

Palatability of Chilled and Frozen Beef

THE opinion is widely held in the meat trade according to a report by the International Institute of Refrigeration, that freezing has a deleterious effect on the palatability of meat. With the resumption of the chilled beef trade between New Zealand and the United Kingdom in 1952, interest in the difference in palatability between chilled and frozen beef was revived. The meat industry investigated the practicability of freezing beef more quickly in eighths, reducing the temperature at the bone from 56 F to 2 F within 38 hours.

Experiments were carried out with the aim to comparing the same quality of beef preserved by chilling, freezing and faster freezing. Two experiments (1952 and 1953) are described. The conclusion, which confirms that of Moran and Smith (1929) is that if meat is initially of the highest quality a deleterious effect by freezing is of insignificant proportions. This applies equally to prime lean cuts and coarser cuts of beef. It has been suggested that the opinion that chilled beef is superior to frozen beef depends on the fact that chilled meat received in the United Kingdom comes from younger and better stock and is transported and consumed in a much shorter time than frozen beef.

Refrigerator Car Icing Increase Allowed

THE Interstate Commerce Commission has authorized the nation's railroads to increase ice refrigeration charges on perishable commodities by 15 percent. The increase does not apply to mechanical refrigeration. The I C C estimates the rate hike will bring the carriers approximately $6,000,000 of additional revenue a year.

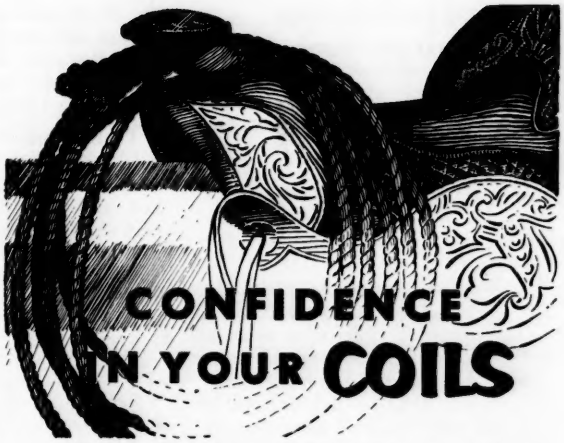
COMING CONVENTIONS

NORTH CAROLINA ICE ASSOCIATION
March 12-13, 1956
Sir Walter Hotel, Raleigh, N. C.
LEWIS H. POWELL, Secretary-Treasurer

AMERICAN WAREHOUSEMEN'S ASSOCIATION
April 9-13, 1956
Hotel Statler, Los Angeles, Calif.
Wm. Dalton, Secretary

NATIONAL ASSOCIATION REFRIGERATED WAREHOUSES
April 9-13, 1956
Hotel Statler, Los Angeles, Calif.
Wm. Dalton, Executive Vice President

NORTHWEST ASSOCIATION OF ICE INDUSTRIES
April 11 - 13, 1956
Benjamin Franklin Hotel, Seattle, Wash.
F. Marsh, Secretary



When it's a question of new refrigeration coils, it's no time to speculate on dependability or to compromise on quality. And where it's a question of assuring efficient, uninterrupted operation and low maintenance throughout the years —

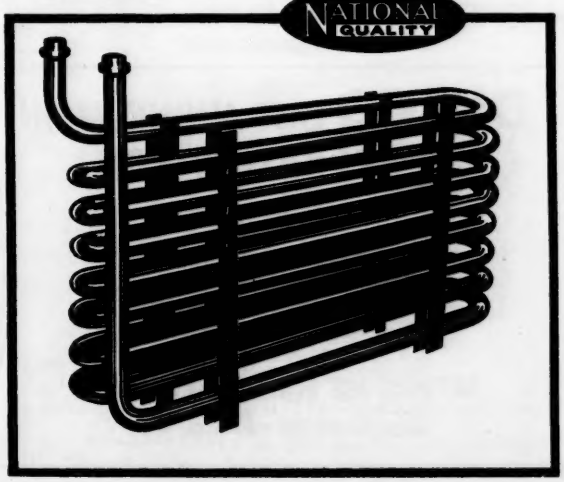
NATIONAL
REFRIGERATION
COILS

offer you the benefits of over 70 years' specialization in the pipe-bending field: experienced engineering and exact production, with smooth bends, perfect welds, and accurate measurements.

Whenever you need coils, write for our free tracing-chart which shows standard dimensions ready to fill in. It will simplify your specifications—whether for zig-zag or nested box or conical or round-flat or reducing coils.

NATIONAL PIPE BENDING COMPANY
162 RIVER STREET • NEW HAVEN, CONN.

Established 1883



Vending Ice In Detroit

WALTER J. HINTZ
Borin Bros. Inc.

IN DETROIT, there are 160 ice vending stations in operation and the saturation point has not been reached by any means. As the population increases and the city grows, more vending stations will be established. Last year we put in 20 stations and they are all paying off. We plan to install a number more this year.

Our company expects to average $5,000 per station per year in gross sales in order to make a profit. Some stations sell $10,000 and $12,000 a year but they are well advertised. It doesn't seem to make much difference what price is charged for Ice. The customers are not going to drive four or five blocks to save a nickel.

Advertising mediums used are radio and television. Television is very good because you can show them Ice. The cost, however, of television advertising is becoming prohibitive. A 20 second spot on a Detroit station costs $360. If you are using radio the best time for advertising is between 4:00 and 6:00 p m., when people are coming home from work and listening to their car radios. We say something like this: "You just went by one of those Borin Brothers Ice-O-Mats. There is one here. . . . . and one out there . . . . . "

You can't promote anything without advertising and Ice has a great future but you have to advertise it. You have to show the people how to use it and when to use it. Advertising should start right at the opening of a station. You should have flood lights, candy for the kids, book matches for adults and other similar novelties.

All of our Ice-O-Mats are listed in the liquor stores. For a few dollars a year the store owner or manager, will allow you to put a small sign in the store indicating where the nearest ice vendor is located.

There is much new business on the outskirts of the city, especially where people stop for a traffic light. The best station that we operate is in a high class apartment building district. The best stations are in areas where there are people of better standing. They are the people who will buy ice.

We sell a 12-1/2 lb. bag of ice cubes and a 20 lb. bag of crushed ice. We feel that they are the ideal sizes. We do vend block ice but very little and at the present time we are debating whether or not to keep the block ice vendor.

One of the two best week ends for packaged ice sales through a vendor is New Year's week end. Everyone should make sure that their equipment is in good condition and a supply of ice is available at this time.

Summary of Talk at Canadian Ice Convention.

Southwestern Officers

NEW officers and directors were elected at the final session of the annual convention of the Southwestern Ice Manufacturers' Association held at the Gunter Hotel, San Antonio, Texas, December 11-13. Newly elected officers are:

President, Frank B. Allerdice, Dallas, Tex.

Vice-president, Tom B. Meacham, Monahans, Tex.

Vice-president, Ben I. Cole, Dallas, Tex.

Treasurer, Jacob M. Irvine, Dallas, Tex.

Directors: James K. Vickers, Beaumont, Tex; O. F. Royer, Galveston, Tex.; Tom J. Campbell, Corpus Christi, Tex.; O. T. Clark Jr., Ft. Worth, Tex.; Obert K. Irvine, Dallas.

"Prepared" Frozen Food Production Increases

PRODUCTION of "prepared" frozen food increased 67 percent from 1954 to 1955, according to data released by the U.S. Department of Agriculture's Agricultural Marketing Service. "Prepared" frozen foods are those which have received one or more preparatory operations usually performed in the home, such as cooking, partial cooking, or blending.

This increase was a part of the food industry's trend towards production of convenience items. The 67 percent figure is based upon a 70 percent reply from the industry in a recently conducted survey. The response is estimated to represent 80 to 90 percent of total production of "prepared" frozen foods.

Of the 12 categories of "prepared" frozen foods surveyed, frozen potato products constitute the largest single category in terms of pounds produced. Production has more than doubled from 1954 to 1955. Others that increased more than 100 percent during the same period were side dishes and hors d'oeuvres.

Frozen Food Containers

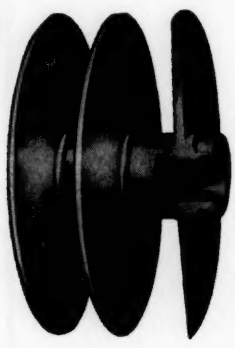
NORWEGIAN State Railways are testing a specially designed insulated container for transporting deep-frozen foods, primarily fish fillets. The container weighs slightly over 1.5 tons and can carry more than 4 tons. Dry ice helps to maintain a constant temperature of about 13 below zero F. Chief advantage is that the packaged food can be delivered directly from the freezing plant to the point of destination without reloading. Four of these containers fit on top of a railway flat car. They can also be transported by truck, with each semi-trailer accommodating two.

DIMCO CAST ALUMINUM FIN EVAPORATING COIL

The Ideal Refrigeration Surface for Cold Storages, Freezer Plants, Dairy Products, Packing Houses, Abattoirs, Breweries and numerous applications

DETROIT ICE MACHINE COMPANY

2615 Twelfth St., Detroit 16, Mich.



★ *Saves Space*
★ *Saves Weight*
★ *Saves Cost*

CAN BE USED WITH ANY REFRIGERANT

Write For Descriptive Folder

Refrigeration in Iran

UNDER the sponsorship of the U.S. International Co-operation Administration at Washington, D.C. five officials of four foreign countries visited a number of cities in the U.S.A. to learn how we do business. Among the group was a member of the firm of S.M. Husseini & Sons, of Teheran, Iran, who promised to report on activities in his country for publication. The information on the refrigeration industry in Iran is as follows:

There are not many refrigeration installations in Iran—only small units like freezers for the home refrigerators, etc. The largest refrigeration system is in the northern fishery area, said to have been built by the Russians, the main purpose being to keep fish and caviar refrigerated. Other refrigeration is used for cooling of food, soft drinks and water coolers. Some of the larger buildings and some motion picture houses have air conditioning systems. Mr. Husseini could not name the makes of refrigeration systems, as he gave the information while he was still in the U.S.A. He knows there are some small refrigeration systems made in Iran, but most of them are imported from the U.S.A. and European countries. Of the air conditioning systems, most are made in Germany. In general, refrigeration is new in Iran, and as most of the equipment is imported and paid for in dollars, the price is not low, but the sale is increasing every year now.

Chart Tells Safety Story at Southwestern Ice Convention

Safety exhibit chart shown at annual convention of the Southwestern Ice Manufacturers' Association at San Antonio, Texas. Viewing the chart are F. B. Allerdice, O. K. Irvine, and W. F. Leonard Jr., Southland Corp., Dallas. Mr. Leonard is director of insurance and safety for Southland, and Chairman of the Food Section, National Safety Council.

Adaptable to any cold storage needs

King Sharp Freeze systems are designed and engineered for your requirements—pre-cooling, freezing or cold storage of foods—for cold storage warehouses, storage freezers, blast freezers, coolers, freezing tunnels—for ammonia or freon refrigerants. King systems in more than 400 food plants here and abroad are proof of King leadership in more than 50 years of air movement engineering.

Write for technical bulletins . . . Our engineering staff is at your service.

THE King CO. OF OWATONNA
907 N. CEDAR ST. OWATONNA, MINNESOTA
MANUFACTURERS OF SHARP FREEZE COOLING, VENTILATING AND HEATING SYSTEMS

BALLARD ENGINEERED
ESKIMO
EQUIPMENT

COMPLETE SUPPLIERS TO THE ICE INDUSTRY

"One Call For All"

BALLARD Sales Co.

TEL. FOrtune 8474
P. O. BOX 1121
Fort Worth, Texas

Chapter Activities

(*Continued from page* 43)

the coil. Also how loads effected the liquid being fed into the coil.

Todd continued his talk Wednesday, January 18, on the Guy King course (expansion valves). McGregor's, Inc., distributors for Frigidaire and other equipment loaned several more types of cutaway expansion valves. Todd used these along with a compressor, evaporator and condenser operating to put over his talk. He explained the valves as most suited for a job, the care of them, and the troubles they can give the unwary operator.

W. D. Marbury, chairman of the Safety Committee, showed a colored motion picture taken at the West Tennessee T. B. Hospital of the personnel of the hospital going through the training of the use of various types of Fire Extinguishers. Personnel included nurses, doctors, mechanical crews. All of the fire extinguishers are emptied and recharged each year during Fire-Prevention Week. The fire department had a pumper truck and crew on the job. A Lieut. gave instruction how to use the various types of extinguisher for various types of fires.

The picture showed the engine and boiler room of the plant. It is a fine engine room and boiler room with the color scheme of painting the equipment marking of pipe lines and various pieces of equipment. The entire building is one of the finest in the country.

The chapter started an attendance award at the last meeting. Also, prizes will be awarded to the members who bring in the most members during the year. The Safety Committee served soft refreshments at the meeting.

Southland Buys Ice Company

THE Southland Ice Company, Dallas, Texas, has purchased the Paramount Ice Company at 711 Addison Street, according to T. R. Collett, Central Division Manager. The plant, equipment and trucks of Paramount will be absorbed into Southland.

Shell Eggs and Products

ALEX V. CHAM
Midwest Produce Co.

A MAJOR use of frozen eggs in recent years has been for later conversion into solids. In the first 11 months of 1955, the egg solids industry used almost 113 million pounds of liquid and frozen eggs, compared with 101 million pounds for the same months in 1954. During this period, total frozen egg production declined from 351.4 million pounds in 1954 to 338.7 million in 1955.

The rapid growth of egg solids since World War II has been due to scientific improvements in functional performance and shelf life. As yet, however, the functional performance is not as satisfactory as that of frozen eggs. The reason, we believe, is that foam and resultant surface denaturization of the proteins during stabilization (glucose removal) seriously affect the functional properties of egg solids.

A new development now in progress may make it possible to use yolk solids in significant quantities in cake mixes. The sensational acceptance of angel cake mixes has created a great unbalance between the demand for whites and yolks, and the use of yolks has been limited because of their short shelf life. We have now applied the glucose oxidase-catalase system to the stabilization of yolk solids in a cake mix by preventing the development of yolk rancidity and other changes. This project requires a novel packaging technique and is presently undergoing shelf life evaluation. These features —"built-in" quality and uniformity —should do much, in time, to lessen the peaks and valleys in egg product costs. Long term stabilization of egg solids quality may also permit hedging transactions on commodity exchanges, an activity which was never successful with frozen eggs.

Summary of Talk at Fact Finding Conference, Institute of American Poultry Industries.

Detroit Plant Holds Three Year Safety Record

THE UNITED STATES Cold Storage Corporation, Detroit Division, Detroit, Michigan, has received a three year safety award from the National Association of Refrigerated Warehouses in recognition of its outstanding plant safety record. The plant qualified by going three consecutive years without a lost-time industrial accident.

Since the Association launched its industry-wide safety program in 1953, the public refrigerated warehouse industry's Frequency Rate has been reduced 23½ percent and its Severity Rate has dropped 44 percent. Dollarwise, the industry has saved over $160,000.

In the past year, NARW received the National Safety Council's Association Award at the 43rd National Safety Congress and Exposition in Chicago as well as receiving a Certificate of Recognition by the American Trade Association Executives in recognition of its successful industry safety program.

USDA Awards Contracts For Packaging Butter

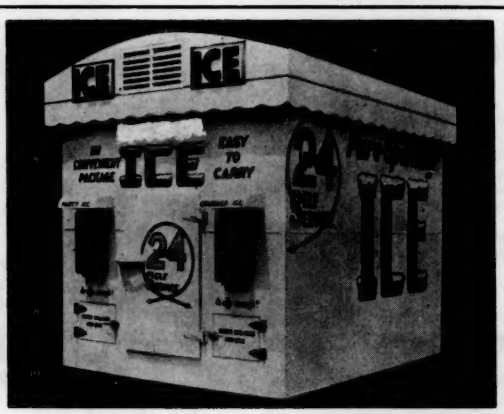
THE United States Department of Agriculture has reported awards to two companies for repackaging 1,440,000 pounds of Commodity Credit Corporation-owned butter in one-pound prints for domestic donation for school lunch and welfare use. Awards were made to: Sugar Creek Creamery Company, Danville, Ill., 345,600 pounds at 1.25 cents a pound; and Harps Green Valley Farms, Shawnee, Oklahoma, 1,094,400 pounds at 1.286 cents.

K. G. Brown Mfg. Co., Inc., Mattituck, N.Y.

PRESENTS:

The Most Modern Automatic Ice Cube Vendor.

- **Dispenses Cube, crushed, party and block ice**



- **Ready for immediate operation.**

The 8' x 10' station pictured here, vends more than 200 ten-pound bags.

The new low-cost 6' x 8' station vends more than 85 ten-lb. bags.

Write today for complete details on this Double Unit and other sizes and models.

Houston Meat Plant Expands Facilities

IN Conjunction with its recent designation as Houston's second meat-packing plant to get U. S. government inspection, the Blue Ribbon Packing Company has expanded its facilities to include two large, new storage rooms. Specified for the insulation job was Styrofoam, adhered with Talcote, a special-formula asphalt adhesive, and finished with the new coating, Fire-Ban.

The larger of the two storage rooms, operating at 35 F, features two self-supporting walls with 4-inch-thick Styrofoam boards laid in parallel courses. Boards are adhered with Talcote which offers high resistance to vapor transmission, and coated with a quarter-inch thickness of Fire-Ban which gives the wall an Underwriters Laboratory "non-combustible" rating.

The Blue Ribbon Packing Company plant at Houston, Texas, offers modern facilities for handling meat products. New additions to the plant include two large storage rooms.

The Blue Ribbon Packing Company, operated under U. S. Government inspection, slaughters an average of 275 head of cattle daily. The plant also has six smoke houses in which hams, bacon and sausage are cured.

Market for Air Conditioning

(Continued from page 2)

resented by all office building structures. As a starting point, the total existing office building market including buildings already conditioned as well as those yet to be conditioned, is $3.5 billion, and this will give some idea of the enormity of the industrial market.

Mr. Fenn closed his illuminating address with the prediction that over the next 10 years, in the field of large air conditioning and refrigeration, that is systems ranging from 100 tons up, the industry will do a retail volume totaling about $10 billion. The 1956 volume will be about $600 million. Total volume in 1960, five years hence, will be about $850 million. And in 1965, it will have grown to $1.3 billion.

Ice Harvest in Montana

NINE trucks and 40 men worked two weeks at the city beach on Whitefish Lake, Montana to supply 9,000 tons of ice to the Western Fruit Company and about 275 tons to the Great Northern railroad. Quality of the ice was better than usual, it was reported.

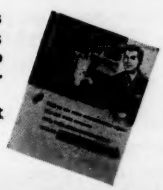
ARMSTRONG REFRIGERANT PURGER CAN DO ALL THIS

- Save Refrigerant
- Cut Power Consumption
- Cut Cooling Water Consumption
- Increase Compressor Capacity
- Save Labor
- Help Prevent "Ammonia" Explosions
- End Disagreeable, Smelly, Bothersome Hand Purging

BULLETIN No. 2211, free on request, tells how Armstrong Purgers accomplish this impressive list of benefits. These are no idle claims. They are based on experiences of users.

It costs nothing to learn about Armstrong Purgers.

Send for Bulletin No. 2211 today.



ARMSTRONG MACHINE WORKS

860 Maple Street, Three Rivers, Michigan

MERCOID® CONTROLS

NEW CATALOG NOW AVAILABLE

WRITE FOR YOUR COPY

ASK FOR CATALOG No. 856A

THE MERCOID CORPORATION
4201 BELMONT AVE., CHICAGO 41, ILL.

Oscar Putts

(Continued from page 33)

and drawing it out; Three, replace blades; Four, replace housing, and Five, start machine.

There are *no* adjustments!

He:— I hate to suggest it — but keep talking.

Me:— The jacket of the rotary booster is cooled by oil recirculated by means of an accessory gear type oil pump furnished with the booster and driven from the rotary shaft. The oil is recirculated through a heat exchanger where it is cooled by water —either city or cooling tower. This is a patented feature and insures against freezing the jacket near the suction port.

He:— One last item. Is it true that rotary boosters are designed for one and only one set of operating conditions?

Me:— In exactly the same sense that a reciprocating booster is designed for one set of conditions. Which is seldom true at all! In selecting a reciprocating booster for a particular application the required speed is determined and established as a set condition by means of selecting the correct motor speed and sheave diameters. In the same sense, the discharge part of the rotary is carefully machined to give optimum efficiency at the selected condition. This does not indicate, intimate, hint, or suggest that the rotary booster will not operate efficiently at conditions differing from the design pressures.

Boss, at this point I was out of new ideas and wind except to show him the list of users — practically all packers and dairy chains, as well as the hundreds of units in cold storage plants.

I probably should have listened to you last summer when you told me to pay attention to physical health in order to be a good salesman. The fact is, I forgot my order book and I couldn't ask him for the order.

Oscar Putts
Sole Central Sales Manager

WESTERN UNION
Collect
Mr. Philo Jerome Whetmore, Pres.
X1008
Westmoreland, Pa.

Dear Boss: Thanks for wiring me that you received Mr. Reinert's order and check. Ability, persistence, knowledge, personality and all-round salesmanship always wins out — like you said. Send commission.

Oscar Putts

Taubeneck Honored By Industry Leaders

GEORGE F. TAUBENECK, editor and publisher of Air Conditioning and Refrigeration News, Detroit, was honored at a testimonial dinner arranged by leaders in the refrigeration and air conditioning industry February 8, 1956 at the Latin Quarter, Detroit, Michigan. The dinner celebrated the completion of 25 years as editor of the News, and was attended by some five hundred industry personnel.

Honorary Chairman of the committee in charge of arrangements, was Clarence Wampler, chairman of the board and president, Carrier Corp. Cecil Boling, president of Heat-X and Bush Mfg. Co., was general chairman. Toastmaster for the evening was Arthur B. Schellenberg, State Representative from Arizona, and formerly president of Alco Valve Co. and past president of the Refrigeration Equipment Manufacturers Association (now the Air Conditioning Refrigeration Institute). Paul C. Smith, president and publisher of Crowell-Collier Publishing Co. was speaker of the evening.

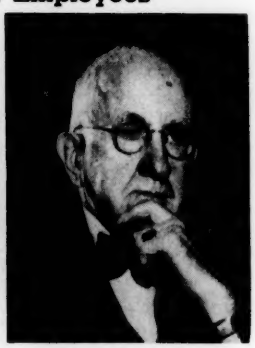
Mr. Taubeneck was presented with gifts for the office and home as a remembrance of the occasion, the presentations being made by Mr. Wampler.

Dodds Elected President of Livestock and Horse Show

E. M. DODDS, chairman of the board, United States Cold Storage Corp., Kansas City, Mo., has been elected president of the American Royal Livestock and Horse Show there. The American Royal, which has grown to its present status of the nation's largest annual livestock and horse show, a rank based on number of exhibitors and awards given during the eight day competition, last year presented its 57th annual show. Mr. Dodds' election was by the twenty four member association board of directors. His American Royal duties date back to the early history of the association.

J. R. Shoemaker Completes Fifty Years Service Receives Tribute From Hygeia Employees

A Family Group — J. Raymond Shoemaker and his five sons who were present at anniversary dinner. Perry M.; Donald W.; J. Raymond; Garth A.; David R.; and Richard Shoemaker.



J. R. Shoemaker

"WE honor a man." So said the employees of the Hygeia Refrigerating Company, Elmira, New York, in their tribute to their president, J. R. Shoemaker, at a dinner January 14, 1956, celebrating the completion of his fifty years of service with that company. The employees presented their distinguished leader with a gold anniversary clock, which was inscribed: "J. R. S., 50th Anniversary, January 15, 1956, from his Hygeia Family."

During the program service pins were awarded to Charles Shafer, 30 years; Walter Steiner and Elmer Schwab, 25 years; Garth A. Shoemaker and William T. Young, 20 years; and to 19 other employees for shorter periods.

It was on January 15, 1906 that J. R. Shoemaker entered the employ of the Hygeia Refrigerating Company as a bookkeeper. "JR," as he is known from coast to coast, through hard work, unquestioned loyalty, an eagerness to learn, and in intense interest in his job, his company, and his industry, achieved a success that comes to few men.

No history of refrigerated warehousing could be written without frequent reference to J. R. Shoemaker and his contributions to the sound, constructive growth of the great refrigerated warehousing industry. Through the medium of letters presented to him at the dinner, his many friends across the country greeted this great American pioneer and leader.

York Corporation Re-elects Lauer President

FOLLOWING the annual meeting of York Corporation stockholders January 27, the Board reelected Stewart E. Lauer president for 1956. This is Lauer's seventeenth term, having been elected president the first time in January 1940. The stockholders reelected Philip H. Glatfelter, Stewart E. Lauer, Richard T. Nalle and Raymond K. Serfass directors for a term of three years and Rodney F. Lauer for a term of two years.

Lauer told the stockholders that the company's program for 1956 anticipates a sales increase in the air conditioning and refrigeration products and systems of between 12 and 13 per cent over the past year for a total of about $94,000,000, of which 75 per cent will be for air conditioning products and systems and 25 per cent for refrigeration. This program excludes any major defense contracts.

He reported new business booked in the first quarter ended December 31, 1955 at $16,500,000 — up about 44 per cent from the same period a year ago. The backlog of unfilled orders at the end of the first quarter amounted to about $34,000,000 compared with $21¾ million at the same time last year, an increase of 53 per cent. In both years the backlog includes a small amount of defense and other orders extraneous to the company's normal line of air conditioning and refrigeration in the amount of about $1,500,000. Thus the pick-up in the backlog is in the company's normal lines.

There were 300 more employees on the payroll in York at the end of December than at the same time a year ago, and it is expected that 400 more will be added.

Net sales in the first quarter will amount to about $13,500,000 compared with $12,900,000 a year ago and will produce a net loss of about $100,000 compared with $393,000 during the same period a year ago. Lauer predicted that the results for the first six months will be substantially ahead of a year ago in both sales and profits and that the last six months should be at least equal to or slightly better than the same period last year.

News of People

ROBERT R. JONES has been appointed general sales manager for the Cities Ice Cream Division of The Borden Company with headquarters in Elgin, Illinois. Mr. Jones has been with Borden since 1948, starting in the sales department. Most recently he has been a branch manager. The appointment of John W. Arnett as manager of the Elgin branch has also been announced. Mr. Arnett has been with the Elgin operation since 1952.

MISS MARGARET I. KINDER, secretary of the South Carolina Ice Manufacturers' Association, has been elected a member of the City Council of her city, Kingstree, South Carolina. This is the first time a woman has been elected to that august body. Furthermore, her election was without any effort on her part. A Citizen's Committee persuaded her to permit her name to be used as a candidate. She did, and she ran ahead of her ticket, of which her many friends in the South Carolina ice industry, are justifiably proud.

R. C. DICKINSON has been named general manager and vice-president of the Chicago Ice Cream Division of The Borden Company. Mr. Dickinson has been with Borden for more than 30 years and most recently has been vice-president in charge of sales for the Chicago Ice Cream Division.

JOHN H. KOPMEIER has been elected president of the Wisconsin Ice & Coal Company, Wilwaukee, Wisc. He succeeds his uncle the late Norman J. Kopmeier. William J. O'Connor has been named assistant secretary.

OHIO SPECIAL ICE CANS

WELDED — RIVETED

ICE CAN GRIDS

Industrial Trucks and Trailers

THE OHIO GALVANIZING & MFG. CO.
NILES — Established 1902 — OHIO

Perfection Makes Complete Automatic Vending Stations, Vault Vendors and Stationettes

Let Us Engineer Your Problems for Lower Cost Operation and Higher Efficiency

Completely Automatic
24 Hour Service

The complete Ice-A-Teria station and engine compartment are mounted on three 5" I-beam skids with a 1½" pipe located crosswise at front and rear of these beams for ease of loading and unloading.

Manufactured in standard sizes of 8x18, 9x20, 9x24, or built to customer's specifications. All stations have plenty of reserve refrigeration and are universally equipped with an automatic hot gas defrost — efficient — economical operation. Stations are built so rigid that if you jack up the front end of the station, the back end of that side of wall will raise too.

Ask about TIME PAYMENT PLANS.

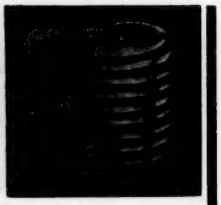
PERFECTION BAGGER-WEIGHER

MODEL 300

Speeds production, eliminates waste, cuts operating costs. Simplifies crushing and bagging, due to 300 lb. capacity of hopper. Fills and weighs 360 - 12½ lb. bags per hour. Adjustable for bag size, weighs 6 to 25 lbs. Portable, will clear any standard vault door.

PERFECTION Ice Scoring Machine Co.

P.O. Box 2140
Fort Worth, Texas



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The "know-how" of nearly 40 years of specialization in pipe fabrication back every job produced by our master metalworkers. You can confidently entrust your work to us. . . even stainless steel, or up to 6-inch extra heavy. Complete welding facilities.

May we quote on your next job.

CHICAGO NIPPLE MANUFACTURING CO.

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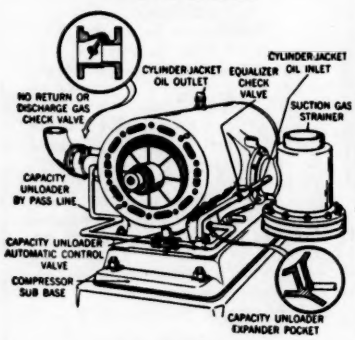
FES FULLER


CYLINDER JACKET OIL OUTLET
EQUALIZER CHECK VALVE
CYLINDER JACKET OIL INLET
NO RETURN OR DISCHARGE GAS CHECK VALVE
SUCTION GAS STRAINER
CAPACITY UNLOADER BY PASS LINE
CAPACITY UNLOADER AUTOMATIC CONTROL VALVE
COMPRESSOR SUB BASE
CAPACITY UNLOADER EXPANDER POCKET

MOST POPULAR REFRIGERATION BOOSTER FULLER ROTARY Featuring Capacity Unloading

1926
C-279

FREEZING EQUIPMENT SALES, INC.

423 WEST MARKET ST. YORK, PENNA.

Qualified Distributors in principal cities

Low Temperature Freezing Equipment

MANUFACTURERS' NEWS

York Corp. Acquires Coastal Equipment Co.

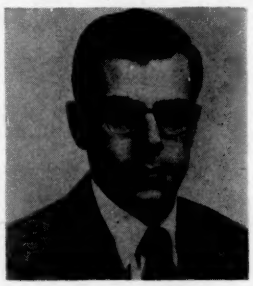
COASTAL Equipment Company, Inc., York Corporation distributor in Houston, Texas, has been acquired by York Corporation and is now a wholly-owned subsidiary incorporated under the laws of Texas as York-Houston Sales, Inc., it was announced by J. K. Louden, vice-president, Commercial Division, York Corporation, at a luncheon in Houston attended by over forty representatives of major business interests in the Houston area. That evening, another meeting was held for York dealers in the vicinity to outline future policies and objectives.

The predecessor company of York-Houston Sales, Inc., has handled commercial-sized "packaged" units in the Houston-Beaumont-Galveston-Port Arthur territory since 1945. However, increased demands for air conditioning and refrigeration, particularly air conditioning for new buildings and for modernization of existing residences, have taxed the facilities of Coastal, with the result that York Corporation has taken over these services and will offer a more complete and thorough program through York dealers.

The existing sales and service organization of Coastal will be maintained and supplemented by other York personnel soon to be appointed. Joseph G. Thompson has been named president and general manager.

Sullivan Joins Sporlan

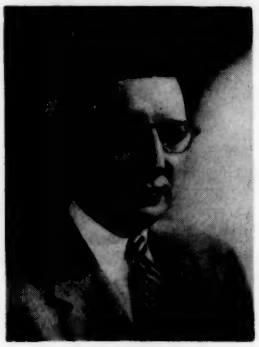
EDWARD P. SULLIVAN has joined Sporlan Valve Company's field sales organization, it was announced by that company. Sullivan, graduate of Northwestern University, has a B.S. degree in mechanical engineering. He has also had extensive, practical experience in the field of air conditioning and refrigeration having served as a senior project engineer for one of the largest manufacturers in the industry. For the present, he will work with E. C. Fockler out of Sporlan's Chicago office in order to expand coverage of the Chicago, Wisconsin, Minnesota, North Dakota and South Dakota areas.



Edward P. Sullivan

Ingham Manager New York Branch Creamery Package

ROBERT H. INGHAM has been appointed manager of the New York Sales Branch of The Creamery Package Mfg. Company, 500 Fifth Avenue, New York City, according to a recent announcement by J. L. Brazee, vice-president of the firm. Mr. Ingham possesses both a technical and practical background in the food processing field. After graduation from Michigan State University with a B.S. Degree in Food Technology, he spent considerable time working in the production and research fields. He joined Creamery Package in 1950 where he served as sales engineer with CP's Chicago branch and was later transferred to the company's general office sales engineering staff. He is married and is a member of the Institute of Food Technologists.



Robert H. Ingham

Nicholson Named New Liquid Carbonic President

IN THE latest of a series of management changes, Rex L. Nicholson, president of a West Coast farm equipment distributor firm, was elected president and chief executive officer of Liquid Carbonic Corp. Chicago, Ill.

Mr. Nicholson succeeds William A. Brown, Jr., who resigned December 7, 1955, after control of the company had passed to a stockholder group headed by F. W. Aekerman, president of Pacific Greyhound Lines. The board was increased to 17 members from 13 after the group assumed control last October. Since that time nine new directors were elected, filling vacancy created by Mr. Brown's resignation and replacing four other directors.

Mr. Nicholson, president of Pacific Tractor & Implement Co., Richmond, Calif., became a director at the time Mr. Brown resigned as president and director. The new president will assume the title of chief executive officer from P. F. Lavedan, who was re-elected chairman.

CATALOGS AND BULLETINS

Bulletin On Portable Humidity Recorders

A NEW bulletin describing and illustrating the company's line of portable recorders for relative humidity and temperature has just been released by The Bristol Company of Waterbury, Conn. The six-page two-color bulletin shows samples of typical records made by the "Thermo-Humidigraph" recorders which are designed to record conditions in the room or chamber in which they are placed. Permanent mounting models are also shown. Copies of the bulletin, H1008, are available on request from The Bristol Company, Waterbury 20, Conn.

Folder on Red Primer

A FOLDER describing Rubalt No. 7-C Red Primer has been issued by Rubalt Products, Brooklyn, N. Y. The folder points out the advantages afforded by this product which include quick drying, goes over damp surfaces, covers large area, no finish coat required, physically tough and protects many surfaces. The folder lists many users of the product, together with detailed directions for its use.

Trane Announces New Centravac Bulletin

ALL new from cover to cover, Trane Bulletin DS-399, gives complete data on the company's full range of "CenTra-Vac" centrifugal refrigeration equipment, which is used to provide chilled water for air conditioning and refrigeration systems.

The 50-page bulletin provides full engineering and capacity information on 20 CenTraVac sizes, including six entirely new models in the 400 to 600 hp range. In addition to the larger CenTraVacs, information on eight new models in the 50 to 300 hp range is given.

Worthington Bulletin

A NEW 36-page bulletin titled "Engineered Temperature at Work" is being offered by Worthington Corporation, manufacturer of air conditioning and refrigeration equipment. Complete with index, the bulletin abounds with top-rate photos illustrating Worthington Air Conditioning and Refrigeration applications in 14 different markets.

FRED OPHULS & ASSOCIATES

Consulting Engineers

112-114 West 42nd St. New York City 36

Industrial Power Plants

Refrigeration and

Cold Storage Warehouses,

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VAN RENSSELAER H. GREENE

ENGINEERS

COMPLETE PLANT DESIGNS INCLUDING BUILDING AND EQUIPMENT

11 PARK PLACE NEW YORK 7, N. Y.

Classified Advertising

All classified advertisements are payable in advance. Except for Positions and Help Wanted classifications, this section is reserved exclusively for USED equipment.

RATES: 20c per word; minimum 25 words. $2.00 per line for bold face headings; $15.00 per inch for line listings.

ICE PLANTS—wanted

ICE PLANT WANTED—Export buyer now in New York City purpose to inspect complete 20-50 ton daily ice plant; must be modern Frick, York, Vilter or equivalent machinery, installed within last ten years & available for inspection & shipment immediately. Price secondary to age & condition of machinery & completeness of plant. Must have in first letter photographs, complete inventory & final price "as is" & estimate for dismantling, match-marking, boxing, loading on railroad cars, etc. Dealers invited but must have complete details. Address BOX MR-5, c/o Industrial Refrigeration.

USED EQUIPMENT—wanted & for sale

FOR SALE—241 four hundred pound ice cans size 11x22x62, used three seasons. Galvanizing like new. Mountain Ice & Coal Co., P.O. Box 1457, Pueblo, Colo.

WANTED—100 good four hundred pound ice cans, size 11½x22½x58. Must be good. Mountain Ice & Coal Co., P.O. Box 1457, Pueblo, Colo.

FOR SALE — 1 U.S. Hoffman air blower 300 CFM direct connected 5 h.p. motor, 3600 r.p.m.; good as new. 3 Vertical 5 h.p. motors, good running condition. 1 Gifford Wood 300 lb. scoring machine, good running condition. 1 — 9x9 Frick compressor, belt connected 75 h.p. motor with starter and unloader. Carlisle Hygienic Ice Company, P.O. Box 282, Carlisle, Penna. Telephone 735.

WANTED—200 or 300 good used, or new ice cans; 11"x22"x48" inside dimensions. Malden Ice & Fuel Co., Inc., P.O. Box 171, Malden, Missouri.

WANTED—a 300 lb. or 400 lb. Flynn and Emrich ice cuber in good condition; for 440 volt—three phase current. Pueblo Ice Co., 507 Elizabeth St., Pueblo, Colo.

FOR SALE—One 3¼x3" - 4 cylinder York Freon Compressor. 4x4, 5x5, 8x8 York ammonia compressors. 20"x7" receiver. Write E. Niebling, 1546 St. Clair Ave., Mt. Healthy, Cincinnati 31, Ohio.

FOR SALE-COMPLETE ICE MAKING PLANTS
624 can York—6 can pull.
624 can Frick—8 can pull.
268 can Frick—4 can pull Diesel operated.
1—10x10 York. 125 h.p. syn. motor.
1—9x9 York V-belt drive to 75 h.p. motor.
1—7¼x7¼ Baker—4x4. York
Enclosed horizontal condensers, ice breakers.
JOHN F. CARSON
"A" & Venango Sts. Philadelphia 34, Pa.
Phone GArfield 6-2221

FOR SALE — 8 x 8, Y 30, high speed York ammonia compressor complete with grooved fly wheel and V-belts, also several used motors from 3 to 10 h.p., and a 60 h.p. D.C. The Gus A. Regnier Refrig. Engineering Co., 532 Winchester Ave., P.O. Box 1093, New Haven, Conn.

FOR SALE — Refrigeration equipment; ice equipment; new, used. Advise us your needs. Use "QUICKSEAL" — stops brine tank leaks; easy, efficient, economical. Born Company, 80 East Jackson Boulevard, Chicago 4, Illinois, WAbash 2-3299.

USED EQUIPMENT—continued

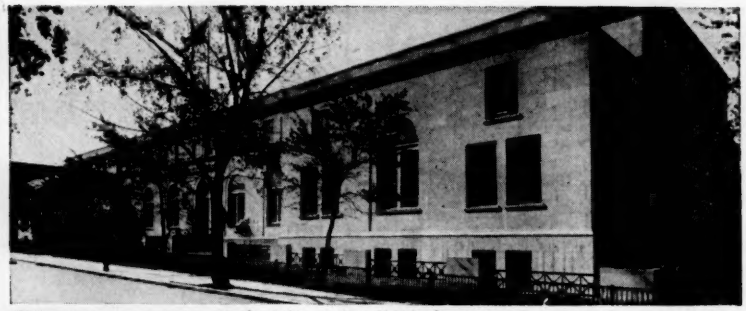
FOR SALE—4 Carrier diffusers, Model 15-T-7, still hooked up as last used, price 25c on a dollar; excellent condition; inspection invited; offer subject to prior sale. For details write to BOX MR-6, c/o Industrial Refrigeration.

FOR SALE—One York 12½ x 14½ with 150 h.p. synchronous motor. One vertical shell & tube condenser 16'-9½" long. One receiver 10' long complete with 4" valve and oil trap. MUST MOVE. L. P. Ilgen, Brook Park, Lewisburg, Penna.

WANTED—York or Frick 10x10 ammonia compressor, latest model available. Gove motor specifications, serial numbers, age, condition & your asking price in first letter, preferably f.o.b. cars or truck. Can also use corresponding starters, condensers, etc. Prepared to pay cash for "quick deal". Write BOX MR-7, c/o Industrial Refrigeration.

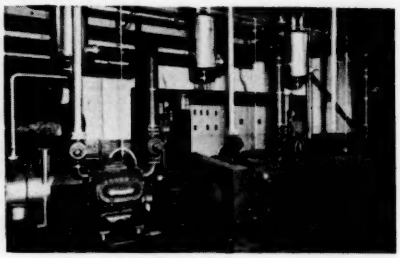
800 TONS YORK REFRIGERATION
York ammonia receiver, cooler, 2 ammonia compressors driven by 200 h.p. electric motors, 1 double compressor driven by 400 h.p. electric motor, 4 ammonia condensers, one 8x8 Frick ammonia compressor. Will sell all or any part. For immediate delivery call or write Westwego Salvage Co., UN 6-3601, Westwego, La.

FOR SALE
1 — 12"x12" 4 cyl. late Frick compressor.
1 — 11"x13" 2 cyl. York direct conn. syn. motor.
3 — 10"x10" 2 cyl. York direct conn. syn. motor.
2 — 9"x9" — 2 cyl. York direct conn. syn. motor.
1 — 7"x7" — 2 cyl. Frick direct conn. syn. motor.
1 — 7½"x7½" 2 cyl. York V. flywheel comp.
1 — 6"x6" — 2 cyl. Frick flat flywheel comp.
1 — 5"x5" — 2 cyl. Frick V. flywheel compressor.
3 — 9¼"x14" 115 h.p. Wolverine Diesel engine.
1 — 8 ton Niagara Evap. condenser.
11x22x47" and 11x22x51" ice cans.
Ice Plants — 20 to 100 tons.
ENTERPRISE EQUIPMENT CORPORATION
77 Alexander St. Yonkers, N.Y.
Cable: ENEQCO Phone: Yonkers 8-8118



▲ Baltimore Motor Vehicles Department whose personnel are now enjoying the comfort of Vilter Air Conditioning.

◀ Vilter Evaporative Condenser is mounted on the roof of a garage across the street from the department.



▶ These three 6-cyl. Vilter Multi-Cylinder compressors handle the 210-ton air conditioning load of the Baltimore Motor Vehicles Dept.

Q. How do you cool a hot spot ...in a hurry?

A. with Vilter AIR CONDITIONING EQUIPMENT ... that

costs less to own*

When the heat's on weather wise and installation wise, a rapid moving team of trained Vilter field representatives and home office engineers can bring a wealth of broad, integrated experience to bear immediately on your problem.

Such was the case of the Baltimore Motor Vehicles Department whose officials early in the year decided to air condition their building . . . wanting it in time for Summer. Prompt Vilter teamwork completed the job ahead of schedule.

This all Vilter installation includes three Multi-Cylinder compressors, an evaporative condenser, a flooded water chiller complete with heat exchanger and all necessary controls.

Success! This Vilter installation has provided the type of trouble-free cooling expected and the Baltimore people have expressed complete satisfaction with the equipment and handling of the job.

Vilter equipment, known and proven for over 88 years, is rugged, provides long years of dependable economical service and efficient operation—all pluses which make for a sound investment. Why don't you Standardize on Vilter, too?

* Savings in low first cost are not the complete answer when considering the installation of refrigeration equipment. But savings in terms of years of extra service, reliable performance and minimum maintenance—that's where Vilter excels in low-cost ownership.

Vilter®

QUALITY CRAFTSMANSHIP that lasts...

ENGINEERING DESIGN that guarantees performance

REFRIGERATION and AIR CONDITIONING

THE VILTER MANUFACTURING COMPANY, Milwaukee 7, Wisconsin

Air Units • Ammonia & Freon Compressors • Booster Compressors • Baudelot Coolers • Water & Brine Coolers • Blast Freezers • Evaporative & Shell & Tube Condensers • Pipe Coils • Valves & Fittings • Pakice & Polarflake Ice Machines

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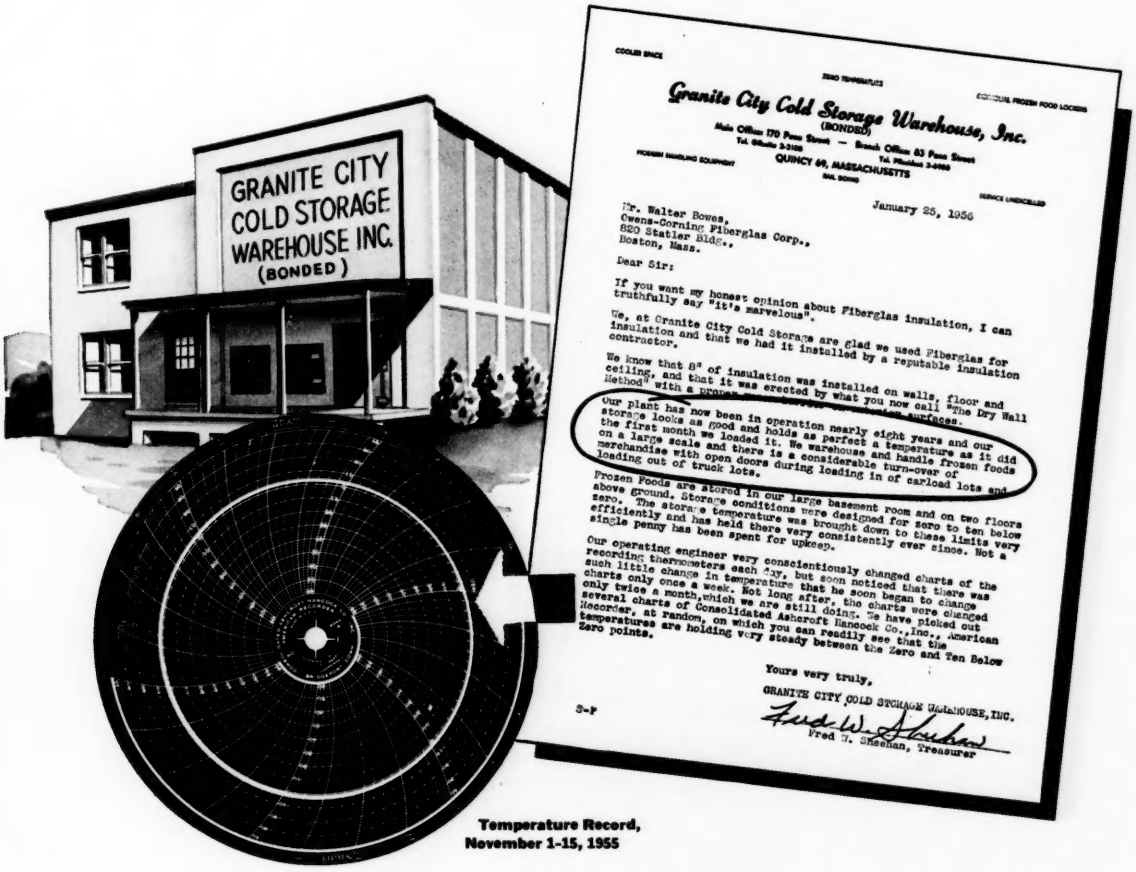
"Marvelous" temperature control (± 2° over 15-day periods!) with 8-year-old FIBERGLAS PF Dry Wall Installation

—praises Fred W. Sheehan, Treasurer, Granite City Cold Storage Warehouse, Inc.


GRANITE CITY
COLD STORAGE
WAREHOUSE INC.
(BONDED)
Granite City Cold Storage Warehouse, Inc.
(BONDED)
QUINCY 69, MASSACHUSETTS
January 25, 1956
Mr. Walter Bowes,
Owens-Corning Fiberglas Corp.,
Boston, Mass.
Dear Sir:
If you want my honest opinion about Fiberglas insulation, I can truthfully say "it's marvelous".
We, at Granite City Cold Storage are glad we used Fiberglas for insulation and that we had it installed by a reputable insulation contractor.
We know that 8" of insulation was installed on walls, floor and ceiling, and that it was erected by what you now call "the Dry Wall Method" with a proper
Our plant has now been in operation nearly eight years and our storage looks as good and holds as perfect a temperature as it did the first month we loaded it. We warehouse and handle frozen foods on a large scale and there is a considerable turn-over of merchandise with open doors during loading in of carload lots and loading out of truck lots.
Frozen Foods are stored in our large basement room and on two floors above ground. Storage conditions were designed for zero to ten below zero. The storage temperature was brought down to these limits very efficiently and has held there very consistently ever since. Not a single penny has been spent for upkeep.
Our operating engineer very conscientiously changed charts of the recording thermometers each day, but soon noticed that there was such little change in temperature that he soon began to change charts only once a week. Not long after, the charts were changed only twice a month, which we are still doing. We have picked out several charts of Consolidated Ashcroft Hancock Co., Inc., American Recorder, at random, on which you can readily see that the temperatures are holding very steady between the Zero and Ten Below Zero points.
Yours very truly,
GRANITE CITY COLD STORAGE WAREHOUSE, INC.
Fred W. Sheehan, Treasurer
S-F

Temperature Record, November 1-15, 1955

Testimony from another sharp freezer operator on the superior long-term performance record of Fiberglas* Low Temperature Insulations! "Our plant has now been in operation nearly eight years," says Mr. Sheehan. "Our storage looks as good and holds as perfect a temperature as it did the first month we loaded it . . . Not a single penny has been spent for upkeep."

To that thermal record of steady low-cost operating efficiency, add the rest of Fiberglas' *unbeatable* combination of advantages for every type of cold storage structure *—the wide range of sizes, densities, finishes . . . light weight, easy handleability, economy of installation . . . low capillarity, low absorption, high vapor diffusion . . . durability . . . fire-safety . . . sanitary qualities!*

Ready to specify insulation for cold storage structures and equipment? You'll want to compare proven-superior Fiberglas Low Temperature Insulations with other materials. Get all the facts now—MAIL COUPON TODAY!

It's amazing the difference Fiberglas makes!

OWENS-CORNING
FIBERGLAS

*T-M. (Reg. U.S. Pat. Off.) O-C. F. Corp.

Owens-Corning Fiberglas Corporation,
Dept. 165-C, Toledo, Ohio

Please send me free the booklets I have checked:

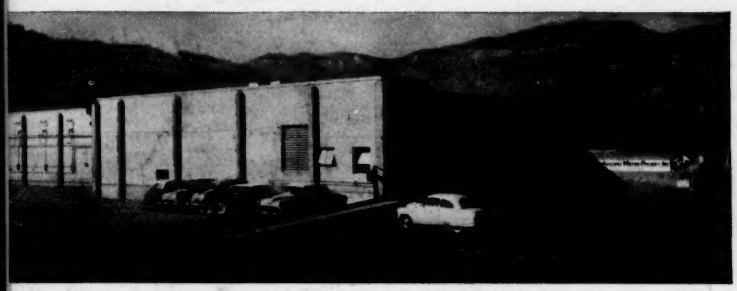
- ☐ *Insulation for Low Temperature Structures and Equipment*
- ☐ *PF Design Details*
- ☐ *Why the Trend is to Fiberglas*

Name and Title_____

Company_____

Address_____

In this 86′ x 140′ freezer room, seen here just after the CP refrigeration system had been installed, frozen foods are stored at a temperature of minus 10° F.



Exterior of Ralphs Grocery Company Frozen Foods Storage Plant showing compressor room and loading dock.

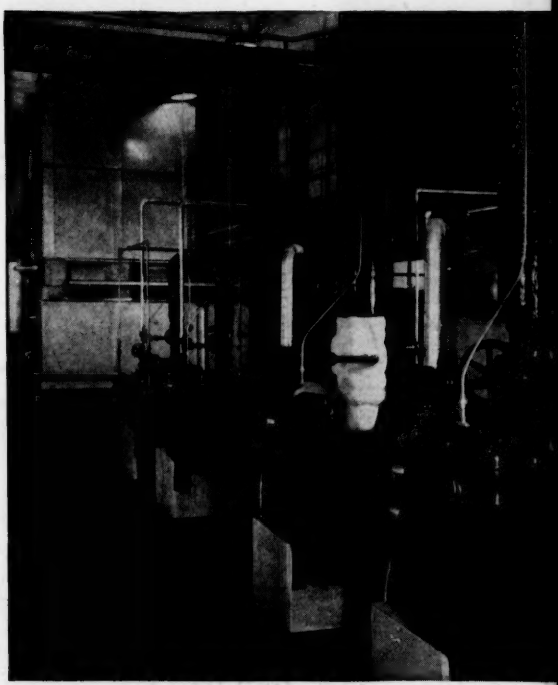
Another *Creamery Package* "PUSH-BUTTON" Cold Storage Plant

Ralphs Grocery Company, Los Angeles

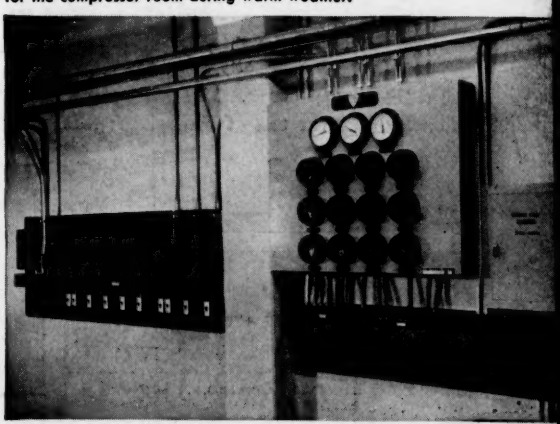
When the Ralphs Grocery Company of Los Angeles decided to install its frozen foods storage plant, it wanted as nearly a "push-button" refrigeration system as it could get. Because of the nature of the operation, with an input of a quarter million pounds of frozen food daily, *some* supervision would be required, but it had to be held to a minimum.

The Creamery Package engineer was called in. Working with the CP engineering staff, he designed a refrigeration system for this big plant that is meeting all requirements and holding down supervision needs to the lowest level practical. Some idea of the scope of this operation can be had from the pictures shown here.

The full story could be told better by a CP engineer. If you have a refrigeration problem, why not call him in? You and he, together with the Creamery Package engineering group, may very well come up with some new answers to better refrigeration at lower cost.



Here are two CP Type "K", 6 cylinder, 5 x 3½ boosters and two CP Type "K" 6 cylinder ammonia compressors. Also shown are the evaporative condensers. Discharge air from the condensers is stack-vented through the roof and provides ventilation for the compressor room during warm weather.



Control panel and gauge board of the CP refrigeration system at Ralphs Grocery Company. Under control of these gauges and switches functions a refrigeration system that is as automatic as can be devised.

THE *Creamery Package* MFG. COMPANY

General and Export Offices: 1243 W. Washington Blvd., Chicago 7, Illinois

Branches: Atlanta • Boston • Buffalo • Chicago • Dallas • Denver • Houston • Kansas City, Mo. • Los Angeles • Memphis • Minneapolis • Nashville • New York • Omaha • Philadelphia • Portland, Ore. St. Louis • Salt Lake City • San Francisco • Seattle • Toledo • Waterloo, Ia.

CREAMERY PACKAGE MFG. CO. OF CANADA, LTD., 267 King St., West, Toronto, Ontario